ONTARIO PUBLIC SCHOOL GEOGRAPHY

AUTHORIZED BY
THE MINISTER OF EDUCATION FOR ONTARIO

PRICE 75 CENTS

W. J. GAGE & CO. LIMITED. TORONTO

Chief Causes of differences in Climate.

1. Latitude - distance north or south of the equator
2. Altitude - distance above sea level.
3. Winds.
4. Ocean Currents.
5. Distance from the sea
6. Mountain ranges.
7. Local Circumstances

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An Aerial View of Niagara Falls

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20,000

W. J. GAGE & CO., LIMITED
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PREFACE

The Department of Education, after open competition, decided to produce a new Public School Geography, entirely Canadian both in authorship and in point of view. Former text-books in Geography adapted from books issued in the United States have proved, in many respects, unsatisfactory. Therefore it was deemed expedient to utilize Canadian talent, to encourage Canadian enterprise, and to secure a thoroughly Canadian outlook, however formidable and hazardous such an undertaking might prove.

An earnest attempt has been made to make the text suitable in style and content for the pupils of the elementary schools. As a result, many teachers will miss in these chapters the treatment of some topics usually supposed to be indispensable in a text-book in Geography. Other topics, usually treated extensively, have been simplified as much as possible. Teachers wishing to supplement the text-book by more extensive treatment, will find abundant material in the revised Teachers' Manual.

The ingenuity of the editors has been taxed to keep pace with the kaleidoscopic changes in political geography which have occurred during the period in which the text has been prepared. They have done their utmost to make the text accurate; but that is no guarantee that it will be equally accurate six months or a year from the time of publication. Accordingly, it is the intention of the Department of Education and of the Publishers to revise the book at frequent intervals as future events may demand.

The Publishers are indebted to many companies, and individuals for the use of photographs for purposes of illustration. They wish to mention particularly the Canadian Pacific Railway, the Canadian National Railways, the Hydro-Electric Power Commission of Ontario, the Massey-Harris Company, General Motors of Canada, the Dominion Textile Company, the Associated Screen News, the Canadian National Exhibition, the Canadian Manufacturers' Association, the International Nickel Company, and Mr. Ewing Galloway, New York. They have also to thank for the use of a large number of photographs, as well as for many courtesies received, the Department of the Interior, Ottawa, the Department of Trade and Commerce, Ottawa, the Department of Railways and Canals, Ottawa, the Department of Mines, Ottawa, the Department of National Defence, Ottawa, and the Department of Natural Resources, Ottawa. The various Departments of the Ontario government have also been very helpful in the way of supplying both information and illustrations.

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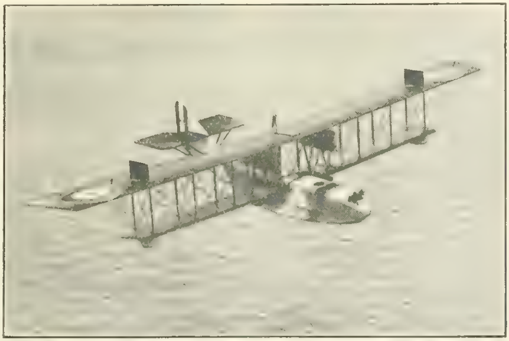
ONTARIO
PUBLIC SCHOOL GEOGRAPHY

INTRODUCTORY

AN AEROPLANE JOURNEY OVER CANADA

We are going to begin our study of Geography with an imaginary journey across our own country. That is no small undertaking, for Canada is a very large country. In fact, it is one of the largest countries in the world. From your home in *Ontario* you may travel eastward, or westward, or northward, for many hundreds of miles without leaving Canada.

In the days of our great-grandfathers, we should have travelled by wagon, or by horseback, or by boat. Now there are fast express trains. They speed across Canada, wide though it is, in less than six days. For our trip we shall choose a mode of travel that is even faster than a fast express train.


This Aeroplane—F.3 Flying Boat—flew from Halifax to Winnipeg.

Many of you have seen an aeroplane like the one shown in the picture. We have chosen the aeroplane for our trip because it is so fast and because we can see much more of the country from high in the air.

The trip across Canada by aeroplane has actually been made. In October, 1920, two officers of the Canadian Air Force flew right across Canada, from *Halifax*, far to the east of Ontario, to *Vancouver*, even farther to the west. Think of flying for more than 3,300 miles over the forests and farms, the rivers and lakes, the cities and towns of Canada! What a wonderful trip they had!

Imagine yourself in the harbour of Halifax. You are seated in a seaplane—that is, a kind of aeroplane adapted for starting from and landing on the water. Everything is ready for the start. The engine begins to roar, the propeller blades begin to whirl, and the plane glides forward over the surface of the water. Then it rises gently into the air and soars higher and higher as it gathers speed. The pilot heads toward the north-west across Nova Scotia, and we are off.

Behind us is the *Atlantic Ocean*. Far out on its green water you can perhaps see a trail of smoke. This marks a steamer coming to port with a cargo of goods from overseas, or one leaving with a load of Canadian products for Great Britain. Perhaps you can see the white glint of a sail. It probably belongs to a fishing schooner. Out there, beyond sight of land, are the finest fishing grounds in the world.

Ahead of us is the narrow peninsula of *Nova Scotia.* A short flight takes us across it. At first the ground below us is rocky, rough, and wooded. As we approach the other side of the peninsula, it improves. There are many fine farms and splendid orchards in this part of the province.

Part of the City of Halifax, Nova Scotia
This photograph was taken from an aeroplane. Notice the Citadel in the foreground.

Leaving Nova Scotia behind, we sweep across the *Bay of Fundy* and begin our flight over *New Brunswick.* It seems to be a province of trees. For mile after mile we see almost unbroken forest. Through the woods run many rivers, some of them of great size. Here and there on the river banks are little villages, each clustered about a saw-mill. There are farms, too, and occasionally we see a town or a city. But we shall always remember New Brunswick as a forest province.

At last we reach a very large river, running between high cliffs of rock. This is the *St. Lawrence,* the greatest river of Canada. We have now left New Brunswick and are in the province of *Quebec.*

The St. Lawrence marks our course for us. We follow the river, noting, as we fly, the boats plying up and down it. The St. Lawrence is the great waterway of Canada. It makes a broad highway for ships from the Atlantic Ocean deep into the heart of Canada.

Soon we reach the city of *Quebec,* with its citadel perched high upon a lofty bluff overlooking the river. It is a busy city, and we can see several large ocean steamers berthed at its docks.

Beyond this city the banks of the river become lower. They are lined with fine farms, cosy hamlets, and busy towns. The traffic on the river is becoming greater, for we are approaching *Montreal,* the largest city of Canada. As we fly over the city, we notice huge factories with smoking chimneys, big office buildings, and large warehouses. Down at the water front are miles of docks and wharves. We can easily count forty or fifty big steamers, receiving or discharging cargo. Some of them will go down the St. Lawrence and out into the Atlantic, others will go up the river into the Great Lakes.

From Montreal we continue our flight along the St. Lawrence and the shore of *Lake Ontario.* We are now flying over our home province. On our left Lake Ontario lies like a sheet of silver. Here and there is a dark smudge of smoke, marking a steamer carrying passengers or goods up or down the lake. To the right, as far as we can see, is field after field of green or yellow or brown. There are dark green patches of woods scattered among the tilled fields. There are many comfortable farmhouses. Often we sweep over quiet little villages. At longer intervals are towns or cities where smoking chimneys show that busy workmen are making some of the many things which we need in our daily life.

An Aerial View of Goderich, Ontario

TECHNICAL SCHOOL (NEAR TOP) UNIVERSITY COLLEGE HART HOUSE
CONVOCATION HALL (MIDDLE) LEGISLATIVE BUILDINGS

View North-west from the General Hospital, Toronto, from an Aeroplane

Toronto is our next stopping place. It is a city almost as large as Montreal and just as busy.

From Toronto our pilot heads north-west across the *Lake Peninsula of Ontario*. How different Southern Ontario is from New Brunswick! In Southern Ontario nearly all the land is farmed, and large towns and cities are found everywhere.

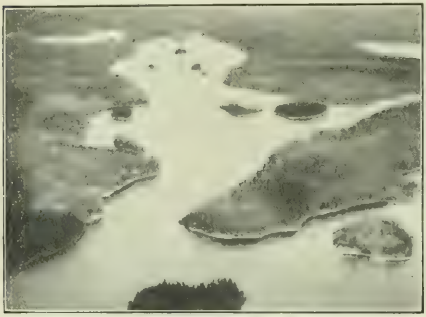
After reaching *Lake Huron*, we settle down to a long and rather monotonous flight over Lake Huron and *Lake Superior*. After hours and hours of flying over the water, we reach the twin cities of *Port Arthur* and *Fort William*. At Port Arthur are large docks and many ships. These are mostly grain carriers. We can see them loading grain from huge buildings, towering up right at the water's edge. These buildings are called elevators. In them is stored grain brought by rail from Western Canada. Fort William, too, has many such elevators. It is interesting to see the grain pouring down the long spouts from the bins into the holds of the vessels.

Leaving Fort William we pass over the roughest country we have yet seen. It is rocky, hilly, and covered with trees. There are many rivers and streams and lakes, both large and small.

For the first time in our journey we have reached the great northern forest which covers more than half of Canada. We could fly for hundreds of miles to the north, for many hundreds of miles to the east, or for as great a distance to the north-west, and never leave this immense tract of forest. In it we should see few signs of life. Yet life is there. Many animals make it their home, and there are hunters and trappers who make their living by catching them. Along the southern edge of the forest are lumbermen busied in cutting down trees for timber, or for pulp-wood, from which paper is made. Yet these men are so few compared with the endless miles of forest that in a flight of hundreds of miles we might not see a human being.

Our course, however, is almost due west, and it will soon take us out of the forest. The trees become more scattered, and at last we are flying over a flat, treeless country. It stretches to the south and west farther than eye can reach. This is the *prairie*. Our first glimpse of it tells us that we have passed from Ontario into Manitoba.

Less than an hour's flight over this beautiful farm land brings us to *Winnipeg*. This is a large and busy city—one of the largest that we shall see in our trip west of Toronto.



A Typical Forest and Lake Area, Northern Ontario

And now for 800 miles and more we fly due west over great fields of grain and wide stretches of grass-land. In this part of our trip we see scarcely a tree. The most conspicuous objects on the level ground are tall, wooden buildings, built at intervals along the railway lines. These are elevators, to which the farmers bring their grain when the threshing is over. The grain cars are loaded at them and carry the grain away to the big elevators at Port Arthur and Fort William. We notice, too, that the farmhouses are more scattered on the prairies than in Ontario. At times we pass over large tracts of land which are not occupied at all. There is plenty of land in the Canadian West.

At last we reach *Calgary*, the largest city of Alberta. Since leaving Winnipeg we have crossed the provinces of *Manitoba*, *Saskatchewan*, and most of *Alberta*.

Now we must prepare ourselves for the most dangerous and thrilling flight of all. Even before reaching Calgary, we saw a wall of dark, cloud-like forms far to the west. These, however, were not clouds. We were looking at the *Rocky Mountains*, and as we approach them and see their peaks soaring high into the air, we wonder how our pilot will ever be able to take us safely over them.

But we soon see that we do not have to go over the highest peaks. We fly between them, through passes in the mountains. Even so, we have to climb higher and higher, and at one time we pass through a bank of clouds and rise above them. What a wonderful sight to see the clouds swirling below us, while we fly in dazzling sunshine above them!

For four hundred miles we fly on over mountains, over deep, narrow valleys, in which are foaming streams or quiet lakes, or over rough, hilly ground covered with dense forest. Here and there in the valleys are farms and towns, and on the largest mountain lakes we see steamers. Sometimes we pass mines, where men are busy cutting deep into the mountains in search of coal, or gold, or silver, or lead.

This flight over *British Columbia* ends when we reach the city of *Vancouver*, on the shores of the *Pacific Ocean*. Here again we see docks and wharves and many steamers bringing goods to Canada and taking away others in exchange.

We have finished our trip across Canada. We have seen something of Canada's forests and farms, her cities and towns, her rivers and lakes, her mountains and mines, her railways and ships. Yet we have seen only a little of Southern Canada. Beyond it, to the north, lie the immense agricultural, forest, and mineral areas on which the future of Canada depends, and which, as yet, are only partially developed. Still farther north is the great northern forest, bordering on the cold, desolate, treeless land along the shores of the *Arctic Ocean*.

Life in the Arctic regions or in the northern forest is very different from that which we know in our comfortable homes in Southern Canada. Let us now see how the inhabitants of these parts of Canada live.

MEN WHO LIVE BY HUNTING AND FISHING

The Men of the Frozen North.—Far, far to the north of our province live the *Eskimos*. Their land is very cold. For nine months of the year the snow lies deep over all the ground, and thick ice covers the water. For months during the winter the sun is never seen at all. Terrible blizzards often rage for days together. When the sky is clear, the bright stars help to lighten the gloom. The Northern Lights, which we can sometimes see flickering in the sky, are much brighter in Eskimo Land. Their greenish radiance casts a weird light over the snow and ice.

The summer is only three months long. During that time the sun never disappears from the sky, but it does not give nearly so much heat as in our country. It is always low down in the sky near the horizon. Its slanting rays melt the snow and ice from the southern slopes and thaw the surface of the soil. Mosses, lichens, and coarse grass grow on the cold ground during the summer. No trees or grain or fruit, such as we have, can grow there. A few varieties of berries, which grow in the warmer parts of Eskimo Land, are the only vegetable food the Eskimos can get. They must live almost entirely upon the flesh of animals and fish.

The Eskimos are a race of people quite different from us. They are shorter than the men of Southern Canada, but sturdy and strong. Their skin is yellow, their hair is straight and black, their faces are broad and rather flat. There are not many Eskimos, because their country is so cold and poor that there is food enough for only a few people.

During the summer the Eskimos live in tents made of skins. The tents are small and are easily moved as the Eskimos roam from place to place in search of food. During the winter they live in round houses built of blocks of snow. The thick snow walls of their *igloos* keep out the keen winds. A block of clear ice serves as a window. The door is only a hole in the wall, so low that the Eskimo has to creep through it. A tunnel of snow is built up to the door to keep out the wind. A curtain of skins hangs over the doorway between the tunnel and the house. The big, furry dogs, which pull the Eskimo's sled and help him in hunting, are sheltered in the tunnel.

The Eskimo has no furniture in his house. A bank of snow, covered with furs, serves as couch and bed. In the middle of the house stands a cooking lamp, which burns oil made by melting the fat of animals. It has a wick made of dried moss. Over the lamp hangs a stone pot. In this pot the Eskimo melts snow and stews the flesh of the animals which he catches. Sometimes he manages to get an iron kettle from some of the white men who come to his land to catch whales.

Most of the Eskimos live on islands. These are separated from one another and from the mainland by wide straits. In the sea around their shores live seals, walruses, whales, and fish of many kinds. Of these, seals are the most useful. They provide the Eskimo with warm fur for clothing, with fat to burn in his lamp, and with meat to eat.

An Eskimo Family

The Eskimo makes his own weapons and tools. His spear is made of bone, sharpened and barbed at the tip. A long thong of hide is tied to it, so that he can throw it into the water at seals and fish, and pull it back again. The framework and runners of his sled are made of bone. The harness for his dog team is made of strips of hide. He makes a serviceable boat by stretching sewn seal-skins over a framework of bone. He finds that small, sharp splinters of bone make good needles and that tough sinews make excellent thread.

Like us, the Eskimos are fond of games. They run races and play football. They skate with bone runners fastened to the soles of their skin shoes. During the long winter nights they play many in-door games with bones and leather strings. Often the men carve pictures of sleds, or bears, or dogs, on pieces of flat bone.

A Polar Bear

Most Eskimo boys do not go to school. They know nothing of the world except their own bleak land. They do not know what farms are, or factories, or railways, or stores. They have only one ambition. They want to become great hunters. They spend much of their time with their fathers, learning to hunt and to fish or to make weapons.

The Eskimos are able to live without many of the things which we use. Most of them have no wood, no coal, no iron, no gardens, no farms, yet they are able to get food, cook it, build houses, make clothing, tools, and even playthings. They cannot have the comforts which we enjoy, because their land does not produce so many of the things which help us to live comfortably. They cannot get these things from us, because they live so far away. There are no railways in their land. Because of the ice, ships cannot reach it easily. Therefore these Eskimos have almost no trade with other people.

Of course, those Eskimos who come in daily contact with the fur-traders and the Mounted Police live much as white people do. They live in heated houses, wear clothes and eat food very like our own, and enjoy many modern comforts and conveniences. These Eskimos depend for their living chiefly upon the whaling and fishing industry.

The Men of the Northern Forest.—Before the white man came to America, the *Indians* hunted over the whole continent. They did not know how to work iron, and so they tipped their spears and arrows with chipped stone. They also made hatchets, called tomahawks, out of stone. They dressed in clothing made from the skins of animals and lived in wigwams of hide or bark.

As white settlers kept coming out in greater and greater numbers from Europe to America, they gradually spread over the sections of the country which were good for farming. Large tracts of ground, called "reservations," were set aside for the Indians. There are several such reservations in most of the provinces of Canada. There the Indians farm as we do, dress in a similar way, and live in much the same fashion.

Lying to the north, between us and the cold Arctic regions, is a broad stretch of country in which Indians still live and hunt much as they used to do. Nowadays, of course, they use rifles and cartridges instead of bows and arrows. They have good steel knives and axes instead of stone tomahawks.

Prairie Indians in ceremonial Dress

The hunting-grounds of the Indians are covered by the northern forest, which stretches across the whole continent from *Alaska* to *Labrador*. Part of this great forest of spruce and fir lies in the northern part of our own province. The ground is for the most part rough and rocky, with many swamps in the low parts. There are innumerable lakes and countless streams and rivers in this part of Canada.

The winters are long and cold. The snow lies deep on the ground for six or seven months of the year. The winter days are shorter and the summer days are longer than in Southern Canada. The short summers are quite hot, so that several varieties of wild berries grow in profusion in the woods.

Along the edge of the forest there are many trading-posts. Usually they are built beside large rivers. A great many of them belong to the *Hudson's Bay Company*, which was formed in England over two hundred and fifty years ago. There is a store at each post, where the Indians can buy flour, bacon, beans, canned fruit, blankets, tobacco, knives, axes, rifles, ammunition, and many other things which they need. They give the store-keeper furs in payment. Some of these furs are sent down into Southern Canada, where they are made into caps, coats, muffs, gloves, and capes. Many are shipped away to other countries. Good furs are, as you know, very valuable.

The Home of a Fur-trader in the Edmonton District, Alberta

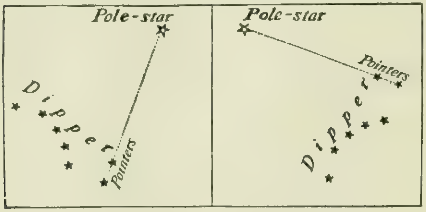
By the beginning of June the rivers in these regions are all free of ice. Then the Indians come paddling down to the posts. The summer is their holiday time. They camp close to the trading-post and trade their furs for the goods which they need for the coming winter. By the end of August the trader's store is filled with bundles of furs, and his stock of goods is almost exhausted.

Indians, Northern Ontario, making a Birch-bark Canoe

Then the Indians start back to their hunting-grounds. The rivers are their easiest paths into the wilderness. In some places the rivers are broken by rapids or falls, and then the Indians have to carry their canoes and their goods along the bank until they reach calm water again. Sometimes they paddle so far up a river that it becomes too small to float their canoes. Then they have to carry these and all their belongings over land until they reach another stream flowing in the direction in which they wish to go. This is called *portaging*. The high ground between two rivers flowing in opposite directions is called a *divide*. The Indians know well all the divides in their hunting-grounds.

The Indians live out in the forest all winter, often hundreds of miles away from the nearest trading-post. The families live in tents by themselves. The nearest neighbours are probably twenty or thirty miles away. There is no lack of fuel, for the forest provides plenty of firewood. They can build as big a fire as they like in their camp-stove and keep their tent warm and comfortable.

As soon as there is a heavy snowfall, the hunting begins. The trapper sets out from his tent and walks in a wide circle around it. At every place where he sees the tracks of the animals he wants to catch, he sets a trap baited with meat. A trapping-line is usually about twenty miles long. Every day or two he makes the round of his traps on his snow-shoes. Often he catches a musk-rat, sometimes a fox, or a mink, or an otter, or a beaver. Occasionally he gets a shot at a lynx or a wolf. He is very glad to shoot a caribou or a moose, for the flesh of these animals is very palatable, and their hides make excellent moccasins. The bears sleep in their dens all winter, and so the trapper does not see any of them until spring-time.



North Star and Pointers

Of course, there are no paths or roads in the forest, yet the Indians seldom lose their way. They keep their directions by the sun. If the sun is hidden, the moss, which grows chiefly on the north side of the trees, helps them to find their way. At night they look for the *North Star*, which is a very bright star and is quite easy to find. The two stars which form the side of the *Big Dipper* farthest from the handle always point toward the North Star.

When the ice breaks up in the spring, the Indians make ready to go to the trading-post. They put their tents and traps and all their belongings into their canoes. A big bundle of soft furs—the winter's catch—is placed in the middle of each canoe. Then they begin the long journey to the store. It may take them two or three weeks, or even longer, to reach it. If they had to walk all the way and carry everything, they would need the whole summer to make the trip. Canoeing is ever so much faster and easier.

The life of the Indians is not easy. They often suffer from the long winter in the forest. Sometimes some of them get lost in blizzards and freeze to death. When the Indians are hurt or sick, there is no one to help them. At the best, tramping many miles every day on snow-shoes or paddling heavily-laden canoes up swift rivers is hard, tiring work.

Yet they have plenty of warm furs and blankets to wear. They have some other kinds of food in addition to the meat from the animals which they kill. Their rifles and steel knives are much better for hunting than the stone-tipped spears and arrows used in former times. They are fairly well off, because the land provides them with food, clothing, and fuel, and because they can trade their furs for tools and weapons from Southern Canada.

The Fishermen of Nova Scotia.—You remember that we began our trip across Canada from Nova Scotia—the province which is farthest to the east and closest to the Atlantic. The sea around the coast of Nova Scotia teems with fish, and many of the people who live there make their living by fishing.

The shores of Nova Scotia are much broken by inlets of the sea, which make excellent harbours. Some of these are tiny ports, just large enough to shelter a few fishing-boats; others are so large that they provide safe anchorage for many large ships.

Fishing Boats, Bay of Fundy

The whole coast is dotted with fishing villages built on the shores of the inlets. The houses of the fishermen are comfortable dwellings. Each house has a garden, in which the fishermen in their spare time grow potatoes, carrots, cabbages, and other vegetables.

The boats of the fishermen range in size from small row-boats and motor-boats to large sail-boats called schooners. The small boats are used for fishing close to shore. The big schooners, however, make long trips far out to sea, staying away from port for months at a time, and returning only when they have secured a full cargo of fish, or when the fishing season is over.

That part of the Atlantic Ocean which lies east of Nova Scotia is comparatively shallow. The deep-sea fish come into shallow water to spawn. They can find plenty of food there. These are two reasons for the immense number of fish which are found in these shallow waters.

The shoals which border the coast of Nova Scotia are called *banks*. The banks are separated by channels or gullies, in which the water is quite deep. East of the banks of Nova Scotia is another great bank, which measures roughly 300 miles across. It is south-east of the island of *Newfoundland*, and so is called the *Grand Bank of Newfoundland*, or more familiarly, "The Banks."

These banks are the finest fishing-grounds in the world. Fishermen come there, not only from Nova Scotia, but also from Quebec, Newfoundland, the United States, and from France, to share in the harvest of the sea. They catch many varieties of fish, such as herring, halibut, haddock, and cod.

Most of the big fishing schooners of Nova Scotia are engaged in cod-fishing. Each schooner carries a crew of sixteen to twenty-five men and two or three boys as helpers. When the cod-fishing season opens in March, the schooners set sail for the fishing-grounds. In the hold are stored barrels of bait, usually small fish called caplin, and barrels of salt to cure the fish. On deck there are six to twelve small boats, called dories.

When the fishing-grounds are reached, the dories are swung overboard. Two men, one to row and one to attend to the fishing lines, form the crew for each dory. The dories are stationed at intervals along a course four or five miles long.

The fish are caught either by hand-lines or by long lines. The hand-line is simply a long, stout cord, armed with several hooks, and weighted so that it will sink to the bottom. The long line is a thin but strong rope, 700 to 800 yards long. An anchor and a flag-buoy are attached to each end of it. Short lines are tied to it at intervals of three feet or so, and hooks are attached to these. When the long line is put into the water, it sinks to the bottom and lies stretched out straight between the two anchors which hold it in place. The flag-buoys mark its position. Sometimes the long line remains down half a day, sometimes only an hour or so, the time depending upon how well the fish are biting. When the fishermen are ready to pull the line in, one man rows the dory slowly along, while the other hauls up the line. This is back-breaking work. The line is heavy and stiff, and the fish are not light, for a cod of good size weighs from fifteen to twenty pounds. The fisherman is cramped, too, for the dory is so small that he cannot relieve his tired muscles by changing his position.

Sardine Fishing, Bay of Fundy

The Bay of Fundy sardines are really very small herrings.

In the evening the dories return to the schooner with the day's catch. The fish are put on board, the dories are hoisted, and then the crew have their supper. The men have been up and busy since four or five o'clock in the morning, but the day's work is not yet over. The fish have to be cleaned, salted, and stored away in the hold before the men can go to sleep. The better the fishing is, the harder the fishermen must work.

Drying Fish, Nova Scotia

The fish are dried on racks in the open air.

The life of the fishermen is dangerous and hard. The Banks are often swept by storms, which take their toll of the fishing-fleet. The fishing-grounds are right in the path of the ocean steamers, and many a fishing-boat is run down and sunk by them. The weather on the Banks is often foggy, and this increases the danger of collision.

When the cod-fishing season ends in October, the schooners make for their home ports. If the season has been good, their holds are crammed with thousands of codfish. The cargoes are worth a great deal of money, and they are easily sold, for the fish are always in demand.

With the money received for the fish, the fisherman can buy almost anything he wants. He can have lumber or brick to build a comfortable house, plenty of clothing to keep him warm and dry, and food of every kind. He can have good furniture and pretty pictures in his home. He can buy coal to warm it during the winter. He can have books to read, a piano, a phonograph, or a radio to give him music, or, in fact, anything else he likes. The railways or boats, which take away his fish, bring back all these things for him.

His life is much pleasanter than that of the Eskimo or of the Indian in the far North. He has a better home, better food, better clothing, and many luxuries which they do not know at all. It is much easier for him to sell and buy than it is for them.

You have seen how the Eskimos, the Indians, and the fishermen of Nova Scotia get their living. They all live by hunting or fishing. They all live in Canada, and yet what different lives they lead! Now give the reasons for this great difference.

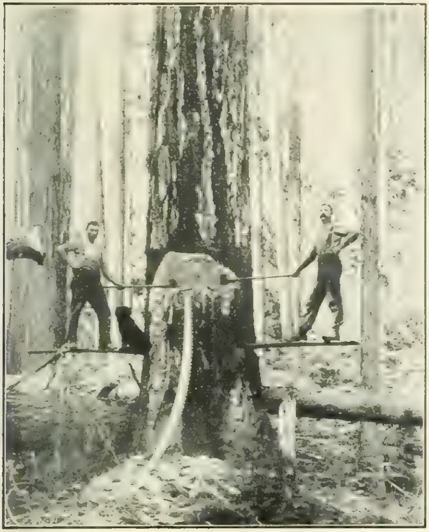
MEN WHO LIVE BY LUMBERING AND MINING

The Lumbermen.—Trees provide the Indian with fuel for heat and for cooking. We are not so dependent upon trees for fuel. We value them chiefly because they provide us with good material for making useful things.

All trees do not yield the same quality of timber. Pine is much softer and more easily worked than oak, but it withstands the weather much better. Hemlock is much more open-grained than pine, and so splinters more easily. Yet all have certain uses to which they are especially well suited. Tough hickory and ash make excellent

A modern Method of cutting Logs

hammer and axe handles. Oak, so hard and with so beautiful a grain, is one of the woods most used in furniture-making. Pine, hemlock, and spruce are used a great deal in building. The wood of certain trees, such as spruce and poplar, is ground up into pulp and made into paper.



Undercutting a Douglas Fir, British Columbia

Much of Canada is covered with large forests of these useful trees. Many men are employed in the Canadian woods, felling trees, cutting them into logs, and transporting them to saw-mills, where they are sawn into lumber.

Toward the end of August the advance parties of the lumbermen make their way into the woods. Each party goes to the section in which it is to work. The men build a camp, bring in the winter's supply of wood, and make rough roads through the forest to the river. As soon as these preliminary tasks are finished, more men come to the camp, and the work of felling the trees begins.

One man goes through the forest and blazes the trees which are to be felled, that is, he cuts off some of the bark. The axemen follow. They chop a deep niche into the trunk upon the side toward which they wish the tree to fall. Then come the sawyers. Their keen, two-handled saw bites deep into the tree with every stroke. At last only a few fibres hold the tree upright. As it begins to sway, these fibres are torn loose, and the tree crashes to the ground. The limbs are then trimmed off and piled in brush-heaps. The trunk is sawn into proper lengths, and the logs are ready to be moved from the woods.

As soon as there is keen, steady frost, the roads are prepared for moving the logs. The snow makes a good roadbed, and if it is lacking, the men sprinkle water over the roads until their surface is a smooth, solid sheet of ice. The teams haul great loads of logs over the smooth ice. The big sleighs upon which the logs are loaded are called "bunks." The logs are hauled out upon the frozen river and piled upon the ice. Sometimes the river is too narrow to hold all the timber. Then the banks, too, are piled high with logs. Each log is stamped with the mark of the company to which it belongs.

When the ice breaks up in the spring, the current sweeps the logs downstream. The rivermen are careful that none are caught on snags or stones. In this way the logs are brought from the forest to

Lumbering at Newcastle, New Brunswick
New Brunswick is one of the great lumbering provinces.

the mill much more cheaply than if they had to be hauled by rail.

At last the logs reach their destination, which is usually some town where there are saw-mills built beside the river. A boom, made of heavy logs chained together end to end, is stretched across the river. The logs gather behind this. They are then sorted according to their marks and taken to the mills of the company to which they belong. Big saws there rip them into lumber.

A Logging Train, Vancouver Island

In British Columbia lumbering is carried on somewhat differently. The country is very mountainous, and the trees are very large. The logs, when cut, often weigh from ten to fifteen tons each. Frequently they are loaded on flat-cars by means of machinery and taken direct to the mill, or to the seacoast, where they are formed into huge rafts.

Ontario is but one of the many places in the world where lumbering is carried on. In Quebec, New Brunswick, and British Columbia it is a very important industry. Great quantities of timber are cut yearly in the United States, in Norway, and in Sweden. The most useful kinds of timber grow in the northern forests. The trees of the great tropical forests, such as are found in Africa and Central and South America, provide some useful timber, particularly for the purposes for which an extremely hard wood is required. Teak and mahogany are the two most valuable of the tropical trees.

The Miners.—Of all the metals that man uses, such as iron, nickel, gold, and many others, iron is the most useful. We see so much of both wood and iron that we are apt to overlook their great value just because they are so common. The Eskimo, who cannot find either in his country, looks upon them as the greatest treasures which he can possess. Iron is usually found combined with other substances. The process of obtaining the pure iron from the ore in which it is contained is called *smelting*. For this great heat is required.

Civilized man requires a very great quantity of iron. He uses it for making machinery of all kinds, for building great factories, for rails, for bridges, for tools, for nails and screws, and for hundreds of other purposes. Indeed, if the supply of iron were suddenly cut off from the world, our mode of living would soon become entirely different. Mention some of the changes that would take place.

Fortunately for us, the world's supply of iron is very great. Africa contains billions of tons of it. There are enormous deposits in England, France, Sweden, and Central Europe. It is found in many parts of North America. The submarine beds of iron ore in Newfoundland are among the largest in the world.

The Creighton Nickel Mine, Sudbury, Ontario
The Creighton Mine is the oldest producer of nickel in Ontario.

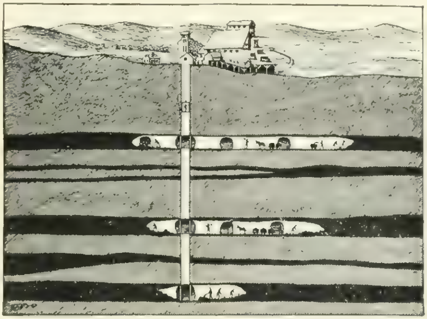
On our own continent, one of the most important deposits of iron lies just south and west of Lake Superior. The ground slopes up from the lake and forms five little ranges of mountains. These are so rich in iron ore that it is scarcely an exaggeration to say that they are mountains of iron. This district is dotted with mines in which thousands of men are employed. Iron ore is also mined in the district north of Lake Superior.

The entrance to the mine is usually a long, sloping tunnel driven into the hillside. Far within, the miners are working. They use large steel drills, driven by compressed air, to bore deep holes in the brown, rocky ore. Then sticks of dynamite are placed in the holes and exploded. Each blast loosens tons of ore and breaks it up into pieces, large and small. The miners load the broken ore into little steel cars, run by electricity. The cars are hauled to the lake shore over the special lines of track built for them. Often the whole distance from the mine to the lake is downhill, and the cars run down without using any power at all. The tracks are extended far out over the water on great steel trestles. Big pockets or bins are built under the trestles. Into these bins the cars empty their loads of ore. The trestles and bins are so high over the water that the ore-steamers can sail right underneath them. When a ship is to be loaded, it is brought beneath one of the bins. A trap-door in the bottom of the bin is opened, and the ore drops into a chute, which carries it into the vessel's hold. A big freighter can be loaded in this way very quickly.

Steel Mills, Sydney, Nova Scotia

Hundreds of thousands of tons of iron ore are shipped down the Great Lakes in large ore steamers to *Hamilton*, *Buffalo*, and other cities of Canada and the United States.

Coal is another mineral of which civilized men need and use a great deal. It is used for fuel to heat our homes. It provides us with steam power, by which much of our machinery is driven. Iron ore would be almost useless to us unless we had coal with which to smelt it. On our own continent hundreds of thousands of men are engaged in mining and distributing coal. In Canada we mine practically no hard or anthracite coal, nearly all our coal being soft or bituminous.



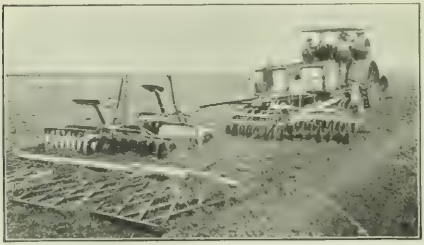
A Section of a Coal Mine
Notice the veins of coal, the tunnels, the vertical shaft, and the elevator in the shaft.

Our own country is now one of the great gold-producing countries of the world. One of our largest mines has yielded gold to the value of $160,000,000 since the first shaft was sunk.

Mining on a large scale is very costly. The machinery is expensive. Mineral land is very valuable. Therefore mines are seldom owned by an individual. Usually many men form a company and contribute money to buy land and machinery. Since a company can afford to purchase plenty of machinery and equipment, the miners can get out a great deal more ore or coal than they would if they were working with no tools but pick and shovel.

HOW MAN OBTAINS FOOD FROM THE SOIL

Farming with Machinery.—Many men, as we have seen, make their living by hunting, or fishing, or lumbering, or mining. They are few, however, when compared with the number of people who live by farming. At least three out of every five persons all over the world grow plants for food.



Disking and Harrowing, Saskatchewan
Notice that a machine is doing the work.

In America and in the greater part of Europe a great deal of machinery is used in farm operations. Ploughs and harrows prepare the ground. The seed-drill sows the seed evenly and without waste. The binder cuts the ripe grain and binds it into sheaves. The separator threshes out the grain from the head of the stalk, blows away the chaff, and sifts the small weed-seeds from the good grain.

American and European farmers grow more grain than their own families can use. The surplus is sold to the millers, who make flour out of the wheat and the rye, and meal out of the oats and the barley. A good deal of the grain must be fed to animals on the farm.

Many other crops are grown in addition to grain. Hay, Indian corn, and turnips make good fodder for the cattle. Vegetables are always in demand in the big cities, and are grown in large quantities.

One farmer can use a great deal of ground if he has machinery with which to work. Could he till so much if he had no horses, no ploughs, no seed-drill, no binder, and no threshing-machine? Our grandfathers had none of these except the horses and the ploughs. They scattered the grain by hand. They cut it with "cradles" and bound it into sheaves with wisps of straw. They threshed the grain by beating it with big, jointed sticks called flails. In those days it took twenty men to grow as much grain as one man can grow nowadays.

Even yet there are many places in the world where men have little or no machinery to help them in their farming. The tools used by these farmers are generally of the rudest kind. Their use entails a great deal of toil for comparatively small crops. In some cases these farmers have no animals to help with the heavy work, and so all the farm work must be done slowly and laboriously by hand. There are many countries where there are so many people that each farmer can have only a little patch of ground. Can these farmers raise much more food than they need for themselves?

Most of the white peoples of the world farm much in the same way as we do, although many of them have not so much land or so many machines. There is so little land in proportion to the population of the countries inhabited by the yellow races of Asia that each farmer can have but a small farm, and he has very little machinery. The black peoples of Africa have plenty of land, but no machinery with which to work it. The brown people of the islands in the South Seas do not

Cutting and Stooking Wheat, Manitoba

need to farm their lands, for they find plenty of food growing wild in their islands.

The Japanese Rice-grower.—The *Japanese* live far to the west of Canada. To reach their land we should have to travel by train for some days to the western border of Canada, and then sail in a big steamer for ten or twelve days more. During our voyage we should cross the Pacific Ocean—the largest ocean in the world.

The Japanese are not white-skinned, as we are, but yellowish-brown. As a rule they are shorter than white men, but they are strong and active. They are kind and hospitable and very clever in many ways.

Nearly nine times as many people live in the islands of Japan as in Canada, yet the whole Japanese Empire is only a little over half the size of the province of Ontario. How large do you think Japanese farms are?

The farmers in the southern part of Japan do not grow wheat or oats or barley as we do. Their country is much warmer than ours. The winds which blow over it from the ocean bring heavy rains. It is too hot and wet for our grains to grow well there. Perhaps some of you have seen wild rice growing in a swamp. Rice grows best in wet ground and needs hot weather to ripen it. Rice is the main grain crop of Japan.

Japan is very hilly. The hillsides are covered with tiny, level plots of ground, forming terraces. The plots are separated by small embankments of earth. Other fields, not much larger than our gardens, cover the plains at the foot of the hills. These small fields on hill and plain are the farms of Japan.

The farmer and his wife and his children all work in the fields. They break up and level the dry ground with heavy hoes, for they have no ploughs or harrows.

One field is set aside as a nursery for the rice. It is flooded with water after the grains of rice are sown in it. Soon the seeds sprout, and the nursery bed is filled with young rice plants. Then the other fields are flooded. Each worker pulls up an armful of rice plants from the nursery bed and starts to set them out in the other fields. He wades through the muddy water, stooping at every step to thrust the seedlings into the rich soil. It is very slow, tiresome work. Can you imagine planting a big wheat-field in this way?

Threshing near Portage la Prairie, Manitoba

After the plants are set out, the farmer has to keep the fields moist. Sometimes he has to carry buckets of water up the steep hillside. The water runs down from terrace to terrace over the whole hill. Some of it will even reach the fields on the plain. Sometimes water-wheels are used. These are big wooden wheels hung over a well or reservoir. Several jars are tied at intervals around the wheel. As the wheel turns, the jars dip into the water, come up full, and then empty into a trough which carries the water into a canal. From this canal the water flows into channels cut between the fields. In this way water can be turned into the fields which need it by simply cutting a hole in the embankment between the fields and the channel. Watering fields in this way is called *irrigation.*

When at last the rice turns bright yellow, it is almost ready to cut. The rice-fields look much like fields of barley. The grain stands nearly as thick and as high. The whole family work at the harvest, cutting the grain with small, sharp knives. They each cut an armful of rice, tie it in a sheaf, and lay it on the ground. They work on in this way until the whole crop is cut. Then the sheaves are carried home and stored in a granary.

A Machine for pounding Rice, Japan
Japan is one of the great rice countries of the world.

The husk of the rice-grain is not loose like the chaff of wheat or oats. It sticks tightly to the grain. The farmer has to pound it off. Sometimes this is done in a hollow mortar of wood or of stone. Sometimes the grain is flailed, and sometimes trodden by oxen. After the husks are loosened from the grain, the mixture of husks and grain is tossed into the air. The wind blows the light husks away, while the heavy grain falls to the ground.

Think of the labour required to grow even a little rice in this way! It would be a costly food if the Japanese farmer had to pay high wages for farm labour. He is not obliged to hire any one, however, for he himself and his family do all the work.

The farms are so small that the farmer cannot grow much more rice than his own family needs. The little he can sell does not bring him much money. But his wants are few. He eats little but rice, with some fish occasionally. He and his children are half naked, and his wife usually wears only a plain blue cotton dress. He makes his own shoes and hats out of rice straw. His house is just a tiny hut, built of bamboo poles and thatched with grass or reeds.

You see the Japanese farmer has to work very hard indeed for a bare living. You know now the reasons for this.

The African Negro.—Far to the south-east of our country, across the *Atlantic Ocean*, is the home land of the *Negroes.* It is a very hot country. The sun is almost directly overhead all the year round. There is never any snow or ice there. Instead of seasons like ours, in some parts of their country they have a dry season, when it rains little, and a wet season, when it rains a great deal. In other parts there are two wet and two dry seasons in the year.

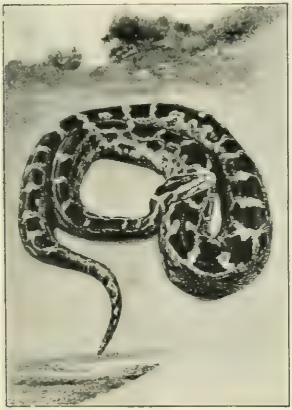
In the land of the Eskimos the winter is one long night. In Southern Canada the days are much shorter in winter than they are in summer. In the land of the Negroes the days and nights are almost of equal length throughout the whole year.

Plants need heat and moisture to grow well. In our own province they grow fastest in the warm, sunny month of June. In that month we have frequent showers, and the earth is kept moist and warm. It is in June that the wheat and other grains shoot up so fast that you can almost see them growing. It is then that the trees add most to the length of their branches.

In the country of the Negroes there is plenty of rain, and the sunny days are long and hot. Therefore all the plants there grow very large. In the drier parts of the country, where there is only one wet season in the year, the land is covered with grass. During the rainy season the grass grows to a height of six, ten, or even twelve feet. After the rains are over, the hot sun soon dries the ground and withers the grass. In these parts of the country roam large herds of antelopes and other grass-eating animals. In the regions where rains are more frequent, trees grow instead of grass. Many of the trees are enormous, towering up two or three hundred feet into the air. Their big branches spread out high up from the ground. Their foliage is so thick that little light or sunshine can get through.

Much of the land of the Negroes is covered with huge forests of these great trees. These forests are dark, silent, gloomy places. Big, rope-like creepers stretch from tree to tree and make the forest almost impassable. Here and there are narrow paths winding among the trees. These are the roads of the Negroes.

In the forests live many strange animals. There are huge apes and monkeys, stronger than the strongest men. The biggest of them are called the gorilla and the chimpanzee. Herds of elephants roam through the forest. Great snakes, called pythons, lurk in it. These pythons sometimes grow to a length of twenty or thirty feet and are as thick as your waist. They are very strong. When they catch an animal, they twine around it and crush it to death with their powerful coils. Even more dangerous are some of the smaller snakes which infest the forest. Many of these are so venomous that their bite means certain death.


A Python

So much water falls during the rainy season that the ground cannot soak it all in. For this reason there are many rivers running through the forests, and the low ground is all swamp and marsh. Hippopotami and crocodiles live in the rivers and the marshes. The hippopotamus is a large, ungainly animal with a huge head and a wide mouth. It lives on the grass and weeds which grow near the water. The crocodile is much more dangerous. Imagine a huge lizard twenty feet long and covered with a horny, scaly skin. Its terrible mouth is armed with sharp, cruel teeth. It lies motionless in the water until some animal comes to drink. One stroke of its powerful tail, one snap of its great jaws, and down it sinks with its prey to the bottom of the river. Many Negroes are caught by crocodiles. When a river has to be forded, the Negroes try to frighten the crocodiles away by shouting and splashing as they cross.

A Hippopotamus

The Negroes have black skins. Their noses are flat and their lips thick. Their hair is woolly, instead of being straight or curly like ours. Many of them are tall and well built. They go about almost naked, as they do not need much clothing in their hot land.

The Negroes live in the more open parts of the forests. They build their houses of wooden poles and cover them with straw or with big leaves. They do not need warm houses. They cook outside, over a fire built in the centre of the village. Around the village they build a wall of mud or a palisade of tree trunks to keep out the wild animals. The wall also helps them to defend their homes against their enemies of the neighbouring villages, with whom they are often at war.

Around the village a clearing is made in which the Negroes grow their food. They have fields of sweet potatoes. They grow Indian corn, also, and the cobs, called *mealies* in Africa, supply many a good meal for them. Then there is manioc, a plant which has thick rootstocks, much like those of the sweet potato. You have not tasted manioc, but doubtless you have eaten tapioca pudding. Tapioca is made from manioc. The Negroes, however, merely mash the manioc roots, make a stiff dough, and cook it in lumps like dumplings. The most useful plant of all is the banana or plantain. The green fruit is roasted and eaten as a vegetable, and the ripe fruit serves as dessert. The leaves of this plant are so large that the Negroes use them to thatch their huts. The fibre of the leaves makes good string, and from it the Negroes weave mats and cloth.

Negro Warriors, Central Africa

These crops are planted and cultivated by hand. Among the Negroes the women alone do the work. They break up the ground with heavy iron hoes, keep the crops weeded, and gather them when mature. The men do no work in the fields. Occasionally they hunt in the forest or fight with hostile tribes.

Iron is plentiful in their country. Long ago they learned how to smelt it with charcoal and to hammer it into useful tools. Almost every village has at least one blacksmith, who makes their rough hoes and heavy spear blades. The Negro uses his spear, not only as a weapon, but also as a knife or an axe.

The Negroes have many useful plants and trees growing wild. There is the oil-palm. This is a tall, slender tree with long, graceful leaves springing from the top of the trunk. Each oil-palm bears a cluster of nuts, filled with oil, which the Negroes press out. They use palm oil for cooking, for lighting, and for greasing their bodies. Another useful tree is the baobab. It bears a big gourd filled with seeds, which the natives pound into meal and use as food. The empty gourds are used for holding water, salt, meal, and such things.

The Negroes live in a land of plenty. Food can be had for the gathering of it. Although there are many Negroes, there is plenty of land for all of them, much more, in fact, than they can use. In their hot, rainy country the crops seldom fail. Life for them is very easy compared with the life of the Japanese rice-grower.

People seldom work harder than they must. In the hot, wet parts of the world men do not work hard, because the earth is so generous. The Negro can grow all the food he needs with no tool but a hoe. But in our land of cold winters and short summers that can scarcely be done. We should soon be hungry if we tried it. The Negro is warm enough without any clothing. We should freeze to death unless we had plenty of clothes. The Negro can live in a shelter of straw or leaves. We must have warm, solidly-built houses. The white peoples, who live mostly in the colder countries, have had to think and to work hard to find better ways to get food, clothing, and shelter. Therefore they have learned how to build machines, erect great buildings, make wonderful cloth out of wool and cotton, and to do many, many other things which the Negro does not know about at all.

People who, like the white races, have learned much, are called civilized, to distinguish them from uncivilized or barbarous people like the African Negroes.

Everybody in the world must get food, clothing, shelter, fuel, and tools in order to live. The way in which this is done is not the same in all parts of the world. It depends upon the plants which grow in any particular country, upon the animals which make their home there, and upon what useful things can be found there in the ground. It depends, too, upon opportunities for trade with other people.

RAW MATERIALS, MANUFACTURE, TRANSPORTATION, AND TRADE

The hunter, the fisherman, the grain-grower, the lumberman, and the miner all help to provide the materials needed for clothing, food, fuel, shelter, or tools. But furs cannot be used just as the Indian sells them to the fur-trader. They must be cut and sewn together to make garments. Wheat is not ready for use when it leaves the farm. It must first be ground into flour. Carpenters take the rough lumber from the lumbermen and fashion it into doors and window-frames or other useful things. The iron ore, which the miner digs out of the earth, must pass through many hands and undergo many changes before it appears as a finished rail, or beam, or machine. The earth yields us very few things indeed which are ready for use just as we find them. Materials which must be worked into a different form before we use them are called *raw materials.* The process of changing them into the form in which we use them is called *manufacturing.* Before the days of machinery this meant making by hand.

Very often the raw material is found far from the places in which it is manufactured. The Indian has to transport his furs by canoe to the trading-post. The trader has to send them on by boat and rail to the fur markets of the world. Much of the ore from the Lake Superior mines has to be shipped down the Great Lakes to the cities where coal is easily obtained. The wheat has to be brought from the farm to the mill.

In the same way, the manufactured article has to be shipped from the mill or factory to the place where it is to be used.

For this reason many men are busily engaged in transporting goods from one part of the country to another. Thousands of men work on our railways. Thousands are needed on the ships which traverse our lakes and rivers. Thousands more are busy with trucks and wagons, carting goods to and from docks and freight sheds.

Lakes and rivers, railways and roads are all highways of trade. Railways and good roads cost a great deal to build and keep in repair. Lakes and rivers are provided for us by nature. A lake or a river-boat can carry as much as scores of trucks or freight-cars. Therefore it is cheaper to ship goods by boat than by rail, especially if the goods, like coal or grain, are bulky. Countries which lack broad, deep rivers and large lakes are at a considerable disadvantage, for railways and roads can never entirely compensate for the lack of good waterways.

The Union Station, Toronto

Waterways are so desirable that in many places artificial waterways, called *canals,* have been constructed. Canals are built to join lakes or rivers, to avoid falls and rapids, or even to provide a short and convenient route from sea to sea or from ocean to ocean.

Long ago, when good roads were few and no railways had yet been built, men liked to live near rivers, so that they could easily send away their products and receive others in exchange. Even to-day, when railways and good roads are numerous, the towns and cities upon the banks of navigable rivers and lakes are better situated for trade than those far from the water. When we study the various countries of the world, we shall find that most of the great cities stand upon the banks of large rivers, lakes, or oceans.

Towing Traders' Boats down the Peace River, Alberta

Canada is particularly favoured with splendid waterways. There are countless rivers in our country which are of value as highways of trade. Most important of all is the waterway formed by the *Great Lakes*, which stretch for hundreds of miles along the boundary between Ontario and the United States, and by the *St. Lawrence River*, which flows from Lake Ontario to the sea. Many large cities, such as *Montreal*, *Toronto*, and *Hamilton*, are situated on the shores of this great highway of commerce. Large steamers ply over it, carrying passengers and goods from city to city. The transportation facilities afforded by the Great Lakes and the St. Lawrence River are of inestimable value to Canada.

So far we have considered only *internal* trade, that is, trade between people living in the same country. But *external* trade, that is, trade with people living in foreign countries, is equally important.

Different parts of the world produce different things. We cannot grow rice or tea in Canada. The Japanese and Chinese do not grow much wheat and have very little timber. Therefore the big steamers which ply over the Pacific Ocean carry across to Asia the wheat and the timber which we have in such great quantities, and bring back tea, rice, silk, and many other things which we need but cannot grow.

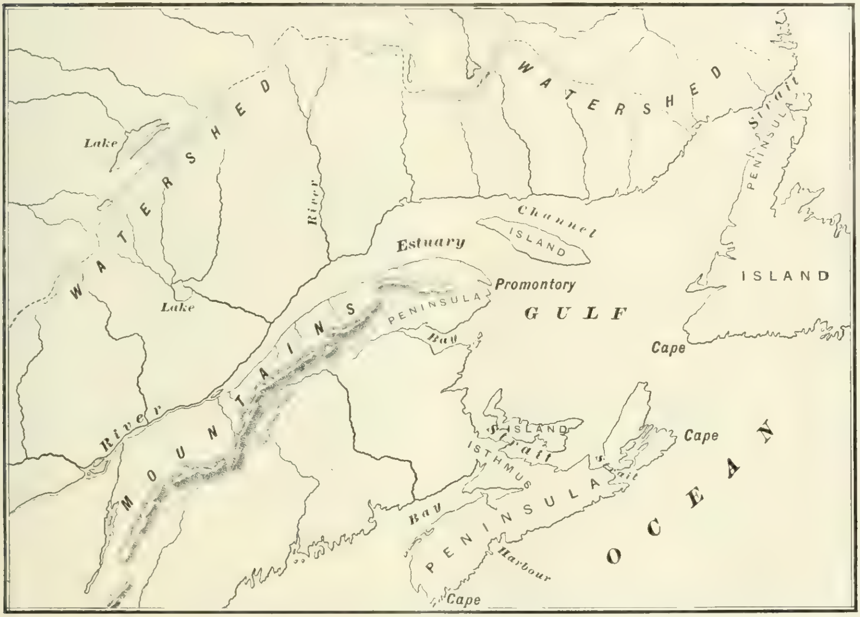
All over the world there is a ceaseless movement of food, raw materials, and manufactured goods, from places which produce in excess of their requirements, to other places which need this surplus. From city to farm and from farm to city, from province to province, from country to country, from continent to continent, every day huge quantities of goods are moved from place to place. The world can supply all its wants by this constant exchange of products. The more a country produces, the more it can have from other lands in exchange for its surplus.

Dog Teams, Yukon Territory

The goods which are brought into a country from abroad are called *imports*. The goods which a country sends out to other countries are called *exports*. Imports and exports together make up the *foreign trade* of a country. All countries, to a certain extent, depend upon their foreign trade to supply their wants.

You know now why it is of immense importance to a country to have an abundant and varied production of raw materials, good manufacturing facilities, and easy and cheap transportation. How has the lack of these things affected the life of the Eskimo?

LAND FORMS



Geographical Terms as represented in Eastern Canada and Newfoundland

The Soil.—Solid rock underlies the surface soil of the land just as it underlies the water of the ocean. No matter where you live, if you dig deep enough, you will come at last to solid rock.

The fine soil which covers the rock in most places in the world really consists of fine particles of stone, with a considerable amount of decayed vegetation and animal matter mingled with it.

If you examine a handful of sand with a magnifying glass, you can readily see that sand consists of small bits of stone. If you rub a handful of soil between your hands, you can feel an unpleasant gritty sensation, due to the fine particles of stone of which the soil is largely composed.

Rock or stone, like wood, decays when exposed to the weather. This process is called *weathering*. The sunshine, the air, the rain, and the frost, all play some part in softening and rotting the rock. At the foot of any cliff you may see pieces of rock of varying sizes, which have fallen from the cliff on account of the weathering of its surface. These pieces of stone are being transformed slowly but surely into soil.

There are many kinds of rock, and each kind contains substances which are peculiar to it. Therefore there are many kinds of soil, due to the weathering of the different kinds of rock. Sandstone and granite, for instance, yield a poor, sandy soil. Slate and shale, when weathered, become clay.

Soil is necessary for plant life. All soils contain more or less of the materials needed by plants. Soils which contain much plant-food we call *fertile*; those which contain little are *sterile*. The fertility or sterility of the soil is of great importance to man, for only on fertile ground can good crops be grown. The best soils are a mixture of the decayed material from many kinds of rock. The depth of the soil is also important. If only a thin layer of soil covers the rock beneath, the ground dries out quickly in time of drought, and plants wither and die. A deep, fertile soil is best for farming.

Plains, Hills, and Valleys.—The soil and rock which form the surface of the land are not smooth and level. The ground is usually uneven and rolling. If the slopes of the ground are very slight and gentle, they form a *plain*. Steep, short slopes form *hills*. The trough which is formed by the converging lower sides of two slopes we call a *valley*.

The hills which you see about your home have been carved out of the land by running water. You have doubtless seen little, muddy rivulets on the slopes of the land after a heavy rainstorm. Each rivulet carries away with it a certain amount of soil. There are many rainstorms in a year, and each alters, to some extent, the face of the ground by washing soil away. During many hundreds of years the water has washed away an enormous amount of soil and rock. In this way deep valleys have been formed, with high hills on both sides.

The Geikie Range, Jasper Park, Alberta

The Gap, Canadian Rockies

Some rocks are softer than others and so decay much more rapidly. Naturally, the rocks which break up first are the first to be carried away by the water. For this reason high ground is left where the rocks are hardest.

The rains are continually washing soil from the high ground to lower levels. Where, then, must the soil be deepest? On the hilltops or in the valleys? Where, in general, are the best farms found?

Mountains.—Mountains, with few exceptions, have not been carved out by running water. The great mountains of the world have been caused by the wrinkling or folding of the rock surface in ages long past. We know little of the forces which caused this, but their evidences are plain. Mountains are great masses of rock, lifted high above the level of the surrounding country.

The peaks of high mountains tower so high into the air that their tops are covered with snow. The upper levels of the air are so cold, that snow, not rain, falls upon the mountain peaks.

Snow sometimes accumulates in the

mountain valleys. The mass of packed snow is very heavy, and therefore it creeps slowly along the valley, moving steadily downward because of its own weight.

The Ghost Glacier of Mount Edith Cavell, Alberta

Such a moving mass of snow or ice is called a *glacier*. The tip of the glacier, of course, melts as soon as it reaches the warmer air of the lower levels. The water from melting glaciers forms mountain streams.

Plateaus.—In many places in the world there are large expanses of fairly level ground inclosed by mountains. Such plains are high above the level of the sea. They are called *plateaus*, or *table-lands*.

Volcanoes.—In some parts of the world melted rock, or *lava*, has broken through the surface of the ground. With it come steam and other gases, often with such violence that the lava is broken up into fine dust. Sometimes the lava bursts through a long crack, or fissure, sometimes through an almost round hole. Such an opening in the earth's crust we call a *volcano*. Often the accumulated lava makes a cone-shaped mass of great height. At the top of the peak is usually a round depression called the *crater*. The craters of active volcanoes are partly filled with boiling lava and flaming gases. Many mountains have been made by volcanoes.

Rivers and their Work.—Nearly all the surface of the land is sloping, and it is well for us that such is the case. If the land were all perfectly level, the water would not run off from it, and swamps would be found everywhere in regions of heavy rainfall. Low-lying swamps are of no use to the farmer until they are drained, and often ditches have to be dug or drain-pipes laid to carry off the water from them. Farm lands should be well drained.

Rivers are natural drains by which surplus water is carried off from the land and returned to the ocean. Just as good drainage is important for farms, so, on a larger scale, good drainage is important for countries and continents.

Rivers not only carry off surplus water from the land, but they also bring water from places where it is of little use to places where it is badly needed. In some parts of the world so little rain falls that plants can grow only where rivers, fed by mountain snows, bring a constant supply of water.

The Lachine Rapids, near Montreal

You have already seen how useful rivers are as highways of transportation. It is worth noting, too, that river valleys form natural routes for roads and railways. This is always the case in a mountainous or hilly country, where the low valleys between peaks are much easier to traverse than the rough and steep mountain-sides.

Rivers play a great part, also, in tearing down and building up the land. Rapid streams carry along with them bits of stone, and in some cases, even boulders. These are dashed against one another and rolled along the river-bed. The stones wear one another down into sand or mud. They also wear away the bed of the river. In this way some mountain rivers have cut deep beds through layers of solid rock.

The Peace River, Alberta

Every rainstorm washes down a certain amount of soil from the slopes of the land into the rivers. This soil will be carried along when the water flows swiftly; but as the current becomes slower, the particles of soil gradually fall to the bottom of the water. This *silt*, as it is called, forms very fertile soil, for it is a mixture of many kinds of soil, brought from widely separated regions by the various streams, called *tributaries*, which flow into the river along its course.

When heavy rainstorms occur, or when the snow melts rapidly in the spring, so much water may flow into a river that its banks can no longer contain it. The water flows over the country on both sides of the river, and this moves very slowly. As the water recedes after the flood, a thin layer of fertile soil is left behind. Each flood adds a little to the thickness of the soil, until the land is gradually raised considerably above the level of the river. Such a plain is called a *flood-plain*. Flood-plains form some of the most fertile districts in the world.

Some of the sediment is carried right to the mouth of the river. As the river enters the sea, its current is suddenly checked, and so the sediment falls slowly to the bottom. If there are no ocean currents to carry it away, it accumulates until it reaches the surface. Gradually a plain is built up at the mouth of the river. Such a plain is called a *delta* and is generally very fertile ground.

THE EARTH AS A WHOLE

Shape.—The earth is a huge sphere. If we could view it from high up in the sky, it would appear circular, like the sun or the full moon. As we can see only a very small portion of its surface when we are standing on it, it seems flat to us.

Yet we know for certain that it is round. Men have travelled right around it. Sometimes the earth comes between the sun and the moon. Then it casts a shadow on the moon, exactly as your body casts a shadow on the ground. The edge of the earth's shadow is always circular. When a ship puts out to sea, the hull is the first part of it to disappear. The top of the masts or the funnels and the trail of smoke can be seen long after the hull is hidden. Give the reason for this.

Size.—Have you noticed the little rough spots on the skin of an orange? They are very small in comparison with the size of the whole orange. The loftiest mountains on the surface of the earth are much smaller, when compared with the whole sphere, than are the little rough spots when compared with the size of the orange.

Have you ever travelled 100 miles by train? It takes two or three hours, and you pass through a great deal of country in that time. Can you imagine travelling in a fast train, day and night, without a stop, for three weeks? Your train would need at least twenty whole days to complete a journey round the world, if such a journey were possible. The train would cover 25,000 miles during the trip. That is the length of the circumference of the earth, or the distance around it.

Surface.—The surface of the earth is partly land and partly water. Of course, there is land underneath all the water, no matter how deep the water may be. Land underlies the great oceans, which in some places are more than five miles deep, just as it underlies the smallest stream or pond.

By far the greater part of the globe is covered with water. In fact, only about one-quarter of its surface is dry land. The Pacific Ocean alone is considerably larger in area than all the land in the world.

The land which forms part of the earth's surface is not in a single large block. It is divided by the oceans into two great masses. One of these masses is formed by the two continents of *North America* and *South America*. These continents are called the *New World*, because they became known to our forefathers only a few hundred years ago. The other contains the three continents of *Europe*, *Asia*, and *Africa*. They are often called the *Old World*. Since Europe and Asia, as you will see from your school globe, form really a continuous land mass, these two continents are often considered as one, under the name *Eurasia*.

Besides these two huge masses of land, there is the comparatively small continent of *Australia*, lying far to the south-east of Asia. It is entirely separated by the ocean from all the other continents. Its existence was unknown to Europeans until 1606—one hundred and fourteen years after the discovery of America.

These continents, however, do not contain all the land in the world, even if we include in them the islands that lie close to their shores. There is another great mass of land far to the south. It is called the *Antarctic Continent*. We know very little about it, for it is covered deep with ice and snow. On that account it is as yet quite useless to man.

Then, too, there are, in the oceans, thousands of islands which are so far from any of the continents that they cannot be considered part of them. They range in size from tiny islets, too small to be shown upon a map, to large islands like *New Zealand*. Their combined area, however, is much less than that of Australia, the smallest of the continents.

The oceans are not entirely separated from one another. They are all connected, so that it is possible for a ship to reach any seaport in the world by passing, if necessary, from ocean to ocean.

Find the *Arctic Ocean* on the globe. Its shores are formed by the northern coasts of Asia, Europe, and North America. Between Asia and North America is a narrow strait, called *Bering Strait*, which connects the Arctic and Pacific Oceans. The much wider gap between Europe and North America connects the Arctic Ocean with the Atlantic Ocean. This gap is broken by the large island of *Greenland*, lying close to the coast of North America, and by the smaller island of *Iceland*, farther to the east.

The west coast of the American continents forms the eastern shore of the *Pacific Ocean*. The east coasts of Asia and Australia are its western limits. The Southern

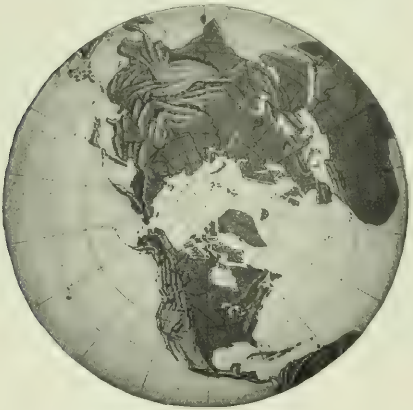
Pacific is studded with thousands of beautiful islands.

The *Atlantic Ocean* extends southward from the Arctic Ocean between the east coasts of the American continents and the west coasts of Europe and Africa. It is much smaller than the great Pacific. Since, however, it lies between the continents of North America and Europe, in which live the most highly civilized nations of the world, the volume of traffic across it is enormous.

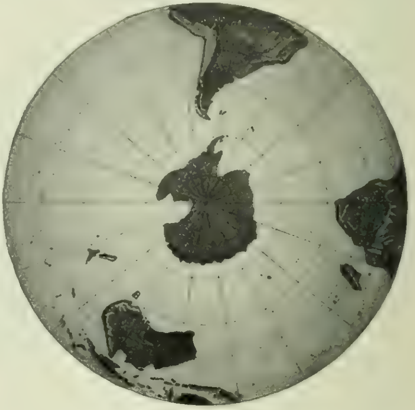
The *Indian Ocean* lies in the basin formed by Africa on the west, Asia on the north, and Australia on the east.

South of Africa, Australia, and South America, there is no dividing line between the oceans. A ship can sail right around the world to the south of these continents without meeting land at all.

The most southerly parts of the Pacific, Atlantic, and Indian Oceans form the *Antarctic Ocean.* It surrounds the unknown Antarctic Continent. No one knows how much of this area is land and how much is water. The thick ice covers all the land and extends over part of the water. Its edge forms a steep cliff of ice, sometimes hundreds of feet high. It is very difficult to find a place in this cliff where it is possible to make a landing.



The Northern Hemisphere



The Southern Hemisphere

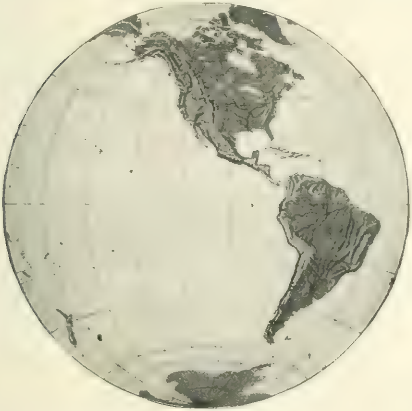
Rotation, Axis, Poles, Equator.—The school globe is a good model of the earth on a small scale. Have you noticed that it turns, or rotates, on a wire? The earth also rotates. Of course, there is no central wire running through the earth. We think of it, however, as turning about a line running through it. This imaginary line is called the *Axis* of the earth.

The central wire of the school globe comes through the surface at two places. So, too, we imagine the earth's axis as reaching the surface at two places. These points are called the *Poles* of the earth.

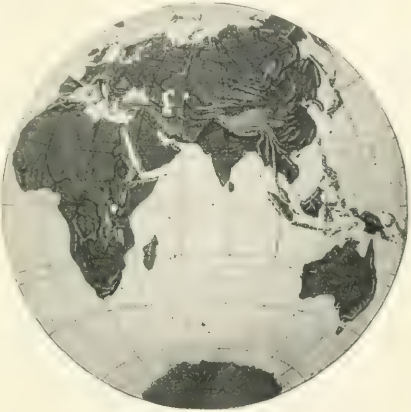
Do you remember the bright star which guides the Indians by night? The *North Star*, or *Pole Star*, as it is also called, is always directly over the *North Pole.* The *South Pole* is the one at the opposite side of the earth.

Now we can add a little to our knowledge of directions. When we speak of a man going north, we mean that he is moving directly toward the north pole, no matter where he happens to be on the earth's surface. In the same way, south means toward the south pole. Suppose a man at the north pole wished to reach the south pole. He could set out facing any way he liked. As long as he kept straight on, he would be moving south. What is the only direction in which a man can look when he is standing at the south pole?

Suppose our traveller from the north pole has begun his journey. Sooner or later he must reach a point half-way between the two poles. He is then standing on the *Equator*. We think of a line joining all the places in the world which are equally distant from the two poles and call it the equator. Can you find on the school globe the line marking the equator? This line cuts through the centre of the hot country of the Negroes in Africa.



The Western Hemisphere



The Eastern Hemisphere

The equator is an east and west line. If our traveller turns so that the north pole is to his left, he is facing east. If he turns so that the north pole is to his right, he is looking west.

Now tell in what directions run all the lines joining the two poles. In what directions run all lines parallel to the equator?

The Hemispheres.—The line of the equator cuts the surface of the globe into two equal parts. These are called *Hemispheres*. The *Northern Hemisphere* is the half of the world lying between the equator and the north pole. The *Southern Hemisphere* lies between the equator and the south pole.

Most of the land in the world lies in the Northern Hemisphere. Look at the top of the globe. You can see North America, Europe, and Asia, all stretching southward. If you look at the Southern Hemisphere, you can see nothing but water, except the tips of the continents of Africa and South America, all Australia, and a few islands. Consequently, the Northern Hemisphere is often called the *Land Hemisphere* and the Southern Hemisphere the *Water Hemisphere*.

We may also divide the earth into hemispheres by a circle around it through the poles. The hemisphere which contains the continents of North and South America is called the *Western Hemisphere*. The other half is called the *Eastern Hemisphere*.

Latitude and Longitude.—If we wish to locate a man's farm, we can say that it is so many miles east or west or north or south of a certain city or town. Location is always a matter of comparison with some place whose situation we know.

In the same way, places on the earth's surface are located by comparison with certain fixed points. North and south locations are made by comparison with the position of the equator. Distance from the equator is called *Latitude*. This distance, however, is not usually expressed in miles. The term *Degree* is used. A degree is the three hundred and sixtieth part of the circumference of a circle. The circumference of the earth is about 25,000 miles. Therefore a degree of latitude is about sixty-nine miles in length.

Instead of writing the word "degrees," we generally use the symbol ° in its place. We read 60° as though it were written *sixty degrees*. How would you read 70°? 35½°?

All places north of the equator are said to be in *North Latitude*; all places south of the equator are in *South Latitude*. Since the distance from the equator to either pole is one-quarter of the circumference of the earth, there are 90° of north latitude and 90° of south latitude. These are numbered from 0° at the equator to 90° at the poles.

The globe and all maps of countries show lines indicating latitude. These lines are called *Parallels of Latitude*, since they are all parallel to the equator.

But to define the position of a place on the earth's surface, we must know, not only the parallel of latitude on which it lies, but also its position on that parallel. This is done by means of *Meridians of Longitude*. These are lines running directly north and south from pole to pole. A degree of longitude is $\frac{1}{360}$ of the distance around the earth on any parallel of latitude. At the equator, the distance between two meridians 1° apart is $\frac{1}{360}$ of 25,000 miles. The distance represented by 1° of longitude becomes less and less as the poles are approached, until at last all the meridians meet at the poles. For this reason we cannot find so easily the distance in miles which is represented by a degree of longitude. It varies from about sixty-nine miles at the equator to nothing at the poles.

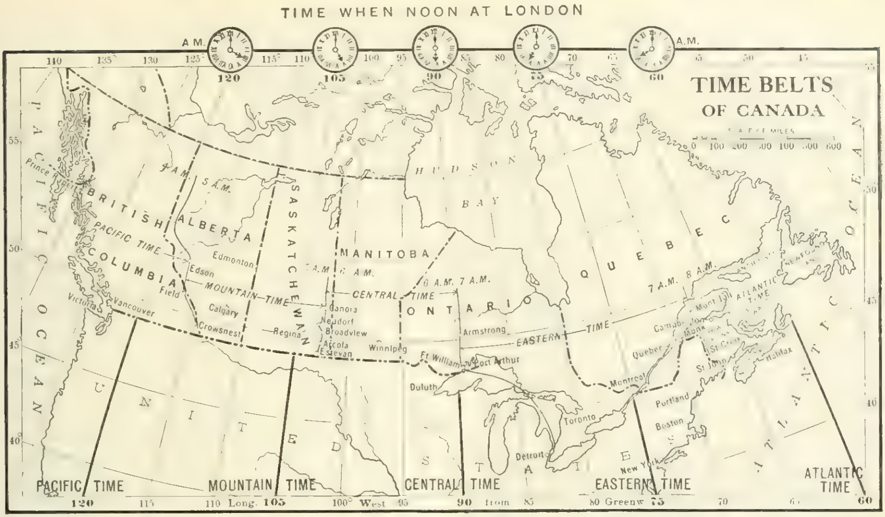
The meridian which passes through *Greenwich* in England is chosen as the one by comparison with which all the others are fixed. The first meridian, or *Prime Meridian*, as it is called, is numbered 0°. All places east of this are in *East Longitude*, until at the meridian of 180° the opposite side of the earth is reached. All west of the prime meridian, as far as the meridian of 180°, are in *West Longitude*.

By the use of these two sets of circles upon the globe and maps, it is possible, with little trouble, to locate any spot on the earth's surface.

HOW THE SUN LIGHTS AND HEATS THE EARTH

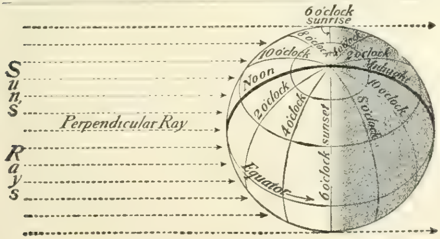
The Rotation of the Earth.—The sun seems to move through the sky during the day, appearing on the eastern horizon, rising higher in the sky until noon, and then gradually sinking until it disappears from view in the western sky. But, as a matter of fact, the sun does not really move. You have already learned that the earth rotates about its axis just as the school globe rotates about its central wire. When day breaks, the earth has turned far enough to bring us within sight of the sun. At noon we must look overhead to see the sun, for by that time the earth has turned sufficiently to bring us more directly under it. At sunset the earth has turned so far that we can just see the sun on the western horizon. During the night we are on the side of the earth which is turned away from the sun, and so its rays cannot reach us. The earth turns from west to east, and, therefore, the sun appears to move from east to west. The earth turns completely around once in every twenty-four hours.

Since the sun's rays can light only one half of the earth's surface at a given moment, one half of the world is shrouded in the darkness of night while the other is bathed in the light of day. When it is daytime with us, it is night on the other side of the world. When we see the sun just rising over our eastern horizon, the people who live just half-way around the world from us are seeing it sinking over their western horizon. The twilight of their evening and of our early dawn is the same, viewed in opposite directions from two points separated by half the distance around the world.



Map of Canada, showing Points at which Railway Time changes in Canada. Lower Part indicates the Theoretical Time (Greenwich) both in Canada and in the United States.

Local Time.—Let us now imagine that the earth has rotated to the position in which the sun's rays light the half of the earth's surface from 90° east longitude to 90° west longitude. At that moment the sun is directly over the prime meridian, so that it is noon at all places situated upon that meridian, while on the opposite side of the earth, along the meridian of 180°, it is midnight. Since the earth turns from west to east, all places lying east of Greenwich to the meridian of 180° have already had their noon, and it is now some hour in the afternoon between noon and midnight. For the same reason, all places west of Greenwich to the 180th meridian have not yet had their noon, and in them it is some hour in the morning between midnight and noon.

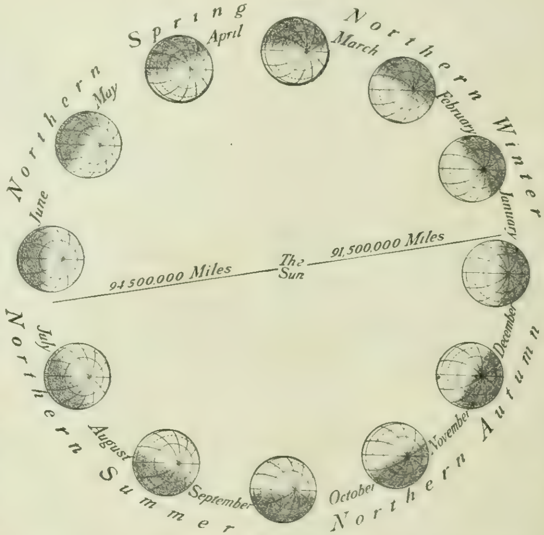


Noon at Greenwich

The earth makes one complete rotation every twenty-four hours. We may express the same fact in another way by saying that it turns through 360° in twenty-four hours, or through 15° in one hour, or through 1° in four minutes. Therefore it is very easy to calculate the time at any given meridian as compared with the time at Greenwich. For instance, when it is noon at Greenwich, it is four minutes to twelve in the morning on the meridian of 1° west longitude, and one o'clock in the afternoon on the meridian of 15° east longitude. What time is it at all places on the meridians of 45°, 60°, 90°, east longitude? Of 5°, 30°, and 105° west longitude?

Standard Time.—It would be extremely confusing if every place used its own local time. Let us think what would happen if all the cities of Ontario should do so. The traveller would have to alter the hands of his watch every time that he went from one city to another. For instance, Toronto is about

4° west of Ottawa. Therefore Toronto time, if exact solar time, would be sixteen minutes slower than Ottawa time. A man travelling from Toronto to Peterborough, 1° east, would have to set the hands of his watch four minutes ahead on his arrival. A business man in Sault Ste. Marie calling an office in Ottawa by long distance telephone would have to remember that Ottawa time would be more than half an hour faster than his own. This would be exceedingly inconvenient for every one, and particularly for the railways. What a confusing thing a railway time-table would be under such conditions!



Position of the Earth in its Orbit each Month.—Notice that the Axis always points in the same Direction.

To avoid this difficulty, it is customary for all places within a certain area to use the same time, even if it is not the accurate solar time for most of them. So Canada and the United States, for instance, are divided into five regions, or time-belts. These run north and south, and are each about 15° wide. All places in each belt have the same time, based upon that of the meridian which runs through the centre of the belt. From east to west, these belts are called *Atlantic*, *Eastern*, *Central*, *Mountain*, and *Pacific Time*. The meridians which determine the time in each are: the 60th for Atlantic time, the 75th for Eastern, the 90th for Central, the 105th for Mountain, and the 120th for Pacific. As there is a difference of exactly 15° longitude between these successive meridians, so there is a difference of exactly one hour of time between successive time-belts. Since the numbers of these meridians are all multiples of fifteen, the time in each belt is an exact number of hours slower than Greenwich time. Consequently, a traveller crossing Canada from Halifax to Vancouver needs to move the hands of his watch back only four times when passing from one time-belt to another. At Campbellton, in New Brunswick, he would put them back one hour, for there he passes from Atlantic to Eastern time. At Fort William, Broadview, and Field he would have to do so again, as he passes from Eastern to Central, from Central to Mountain, and from Mountain to Pacific time.

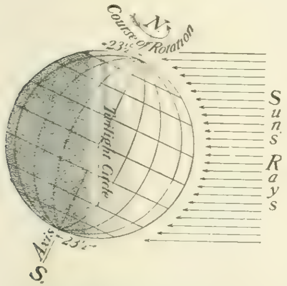
North America is not the only continent which has adopted such a system of time-belts. Europe has three time-belts, differing by one hour. Other continents, also, have similar recognized time-regions.

This system of indicating time is known as *Standard Time*.

The Revolution of the Earth about the Sun.—Besides the daily rotation of the earth about its axis, there is an even greater movement of our sphere. It is rushing continually through space in an almost circular path around the sun. It takes one whole year for the earth to make this long journey. The path it follows is called its *orbit*.

Do you find this hard to believe, and do you wonder why we do not feel the movements of the earth? Have you ever been on a fast express train running over a good road-bed? If you close your eyes, you can scarcely tell that you are moving, for everything about you in the car is moving at the same speed as yourself. If it were not for the slight jars and jerks as the train moves over the rails, you would not notice the motion of the train at all. There are no shocks in the earth's progress; its daily rotation and yearly revolution are never disturbed in the slightest degree.

The Tilting of the Earth's Axis.—You have seen a top spinning on the floor. Usually the top stands straight up and down; that is, its axis is at right angles, or perpendicular, to the floor. Sometimes the top leans a little as it spins; then we may say that its axis is inclined from the perpendicular.



The Sun's Rays reaching 23½° beyond the North Pole on June 21st

½° Let us think of the earth as a huge top, spinning along on an invisible floor. The axis of the whirling earth is always inclined a little from the perpendicular, and the amount of inclination never varies. You can see how the axis is tilted, by noting how the school globe is set in its frame. You will see at once that the axis of the globe is not at right angles to the surface of the table or of the floor on which it is standing.

Although the tilting of the earth's axis is always the same, the position of the earth in relation to the sun is always changing. Thus at one time in the year the north pole is slanted toward the sun, and the south pole away from it. As the earth rushes along in its orbit, this position is gradually reversed, until the south pole slants toward the sun and the north pole away from it.

On June 21st the earth reaches the place in its orbit where the north pole is tilted most toward the sun and the south pole away from it. Then the north pole and a large area around it are in continual sunlight. We speak of the area in which there is continual sunlight during the whole of this day as bounded by a line called the *Arctic Circle.* Find this line on the globe.

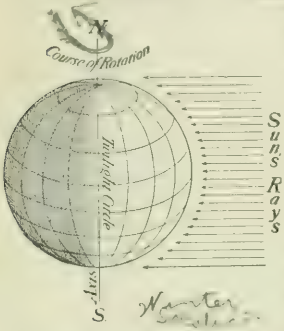
The sun's rays, of course, cannot strike vertically on this far northern region even on June 21st, since the north pole does not face the sun directly. Therefore, even at noon on June 21st, the Eskimos must look southward to see the sun, although it is higher in their sky on that day than on any other.

We must go much farther south to reach the part of the earth's surface which faces the sun directly on June 21st. Find the *Tropic of Cancer* on the globe. At noon on June 21st the sun is directly over all places situated on this tropic. It marks the northern limit of the vertical rays of the sun.

You remember that the equator divides the globe into two equal parts. Since the sun's rays fall vertically on June 21st far north of the equator, more than half of the northern hemisphere and less than half of the southern hemisphere are in sunlight. Therefore it is summer in the north while it is winter in the south. The wheat-grower of Canada cuts his grain in July or August, but in Argentina, far on the other side of the equator, the wheat is ready to harvest in January. For the same reason, on that day, June 21st, all the northern parts of the world have their longest day and shortest night, while in the south the opposite is the case.

As the earth sweeps along in its orbit, the tilting of the north pole toward the sun becomes less and less. The polar area which is continually in sunlight decreases in proportion. The sun's rays fall vertically a little farther south every day, as the movement of the earth in its orbit gradually brings the south pole closer to the sun.

On September 21st the equator faces the sun directly at noon. On that day the sunlight just reaches both poles, and therefore day and night are of equal length throughout the whole world.



Winter

The Sun's Rays reaching both Poles at the Equinoxes

As the earth moves on in its orbit, the south pole remains in the sunlight, while the north pole is tilted away from the sun and is in darkness. On December 21st the earth reaches the point in its orbit exactly opposite to its position on June 21st. Now the south pole is tilted most toward the sun. The area about it in which there is continual sunshine on that day is marked by the line which we call the *Antarctic Circle.* The vertical rays of the sun are now far south of the equator. The *Tropic of Capricorn* marks their most southern limit. Find these two lines on the globe.

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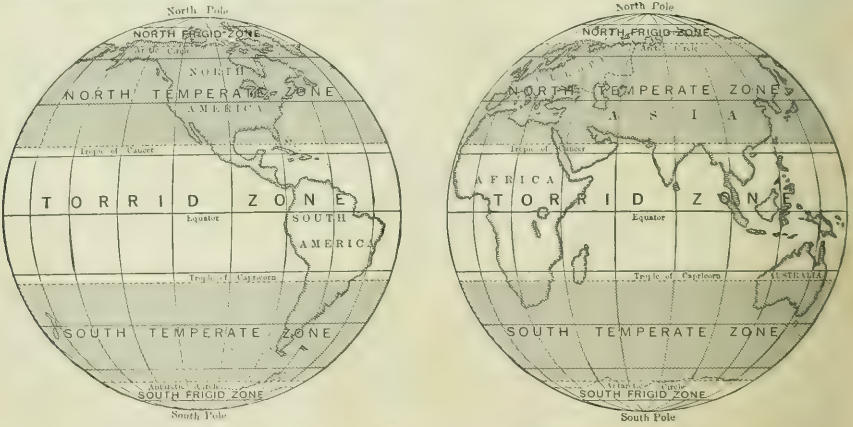


The Zones

On March 21st the earth reaches the point in its orbit opposite to its position on September 21st. Then once more the sunlight reaches both poles, and the whole world has light and darkness for exactly twelve hours each. There are two days, therefore, every year when day and night are equal in length. These two days are called the *Equinoxes,* a word which means "equal nights," that is, nights equal to the days.

During the year the vertical rays of the sun pass from the Tropic of Cancer to the Tropic of Capricorn and back again. Therefore every place lying between these two tropics receives the rays of the sun vertically twice a year, and at no time are the rays very far from vertical. Would the temperature of this broad belt between the tropics be very hot or very cold?

No other region in the world ever has the sun directly overhead. The sun's rays always fall slantingly upon the places which lie north and south of the tropics. The slant of the rays increases with distance north or south of the tropics until the poles are reached. Therefore, in general, the farther north of the Tropic of Cancer or south of the Tropic of Capricorn a place is situated, the colder is the climate.

The Zones.—The hot central belt which girdles the earth between the two tropics is called the *Torrid Zone*. It extends for 23½° on each side of the equator. The poles are capped with ice, but the tropical belt knows no winter. Find its width in miles.

You have already read of one race which lives in the Torrid Zone. Name this race of men and describe their life. Describe a tropical forest and some of the animals which are found there.

That part of the earth's surface lying between the Tropic of Cancer and the Arctic Circle is called the *North Temperate Zone.* The part lying between the Tropic of Capricorn and the Antarctic Circle is named the *South Temperate Zone.*

The temperate zones are best suited to white men. In them cereals, such as wheat, oats, barley, and rye, grow well. In the North Temperate Zone live the great nations of the world.

The area surrounding the north pole and bounded by the Arctic Circle is called the *North Frigid Zone.* Name a race which lives within this zone. Describe their land.

The *South Frigid Zone* is the area between the Antarctic Circle and the south pole. It is even more bleak and desolate than the Arctic regions. The south pole is surrounded by a vast expanse of ice hundreds of feet thick. Nobody at all can live in this area. Even animals are much rarer than in the north, and a few hardy species of birds are almost the only living things to be found there.

Of course, there is no sudden change at the dividing line between these zones. The change is very gradual indeed. There is little difference in temperature between the southern part of the North Temperate Zone and the northern part of the Torrid Zone, or between the northern part of the North Temperate Zone and the southern part of the North Frigid Zone.

The zones are important subdivisions of the earth. If we know in what zone a country lies, we have some idea, at least, of its climate, its vegetation, and its animals. We shall find our knowledge of the zones of considerable help when we come to study the world in greater detail.

THE ATMOSPHERE, WINDS, AND RAIN

The Atmosphere.—The whole surface of the earth is surrounded by air. This covering of air is called the *Atmosphere.* The atmosphere is not of very great depth if compared with the size of the whole earth. It extends for probably 200 miles above the surface of the earth.

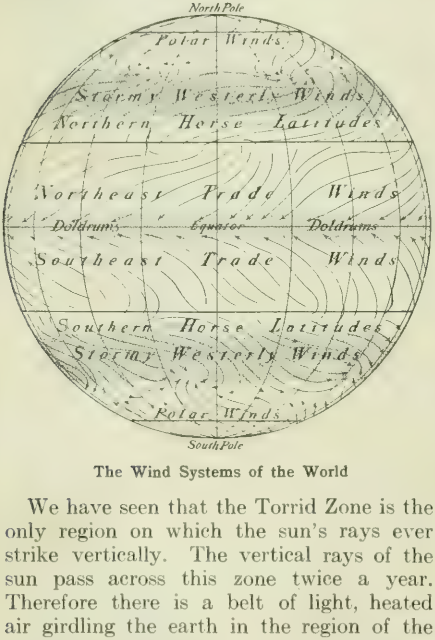
The air is heaviest, or densest, right at the surface of the earth. It becomes thinner, or rarer, very rapidly with increasing height above the earth. Mountain climbers and aviators have found that the air is so rare at a height of even three or four miles above the sea-level that they have some difficulty in breathing.

The temperature of the air is highest close to the surface of the earth. Aviators who fly at great heights must wear warm clothing to withstand the cold of the upper air-levels. Lofty mountains are capped with perpetual snow, even though situated, as many of them are, in the tropical regions.

Winds.—The air is never still. There is a continuous interchange of the air close to the earth's surface with the air at higher levels. We cannot feel these vertical movements of the air, and when they are occurring, we say that there is a calm. The air also moves horizontally over the surface of the earth. Then we can both feel it and see its effects upon the objects around us. The horizontal movements of the air we call *Winds*.

It may seem to you that nothing can be more variable than the wind, which "bloweth where it listeth." Yet the winds are due to certain definite causes, and follow in the main, certain general courses.

There are two essential things to remember. The first is that air, when heated, expands, becomes lighter, and therefore rises, while air, when cooled, becomes heavier and tends to sink toward the earth. An area in which the air is comparatively light is called an *area of low pressure*. An area in which the air is comparatively heavy is called an *area of high pressure*. The second essential point to keep in mind is that the air always tends to move from an area of high pressure toward an area of low pressure.



The Wind Systems of the World

We have seen that the Torrid Zone is the only region on which the sun's rays ever strike vertically. The vertical rays of the sun pass across this zone twice a year. Therefore there is a belt of light, heated air girdling the earth in the region of the equator. This belt will shift a little from north to south and back again as the vertical rays move across the zone. The heated air in it is continually rising. Since this vertical movement of the air cannot be felt, an area of calm results. This area is called the *Doldrums*. It was much disliked by sailors before steamships made them independent of the wind. A ship caught in the doldrums might be held for weeks, while the sails flapped idly on the yards, and the crew whistled for a breeze.

The doldrums form an area of low pressure, while the cooler air to the north and the south forms two areas of comparatively high pressure. Consequently, there is a constant flow of air from these areas toward the equator. In the southern hemisphere, the flow comes from the south-east; in the northern hemisphere, from the north-east.

The winds which result are the steadiest in the world. They were of such great use to sailors in the days of sailing-ships that they were called *Trade-winds*. Since winds are named from the direction from which they come, these are called the *South-east Trades* and the *North-east Trades*, respectively. The former blows over a belt to the south of the equator about 2,000 miles wide; the latter blows over a belt of equal width to the north of the equator. During our summer time the north-east trades are felt farther north than during the winter. What is the reason for this? How do the south-east trades vary with the seasons?

As the trade-winds approach the doldrums, they become warmer, and the air forming them tends to rise. Then, in the area bordering the central belt of calms, they die away in fitful breezes.

The air which rises in the doldrums spreads out at a high level and flows north and south over the top of the trade-winds. At last it reaches the area from which the trade-winds begin to move toward the equator. There it sinks to the earth to take the place of the air flowing toward the equator. Since there is no wind where the movement of the air is vertical, there is a belt of calms marking the northern limit of the north-east trades, and another at the southern limit of the south-east trades. These areas are called the *Horse Latitudes*. They lie a little to the north of the Tropic of Cancer and a little to the south of the the Tropic of Capricorn.

In addition to the doldrums, there are two other great areas of comparatively low pressure. One is north of the horse lati-

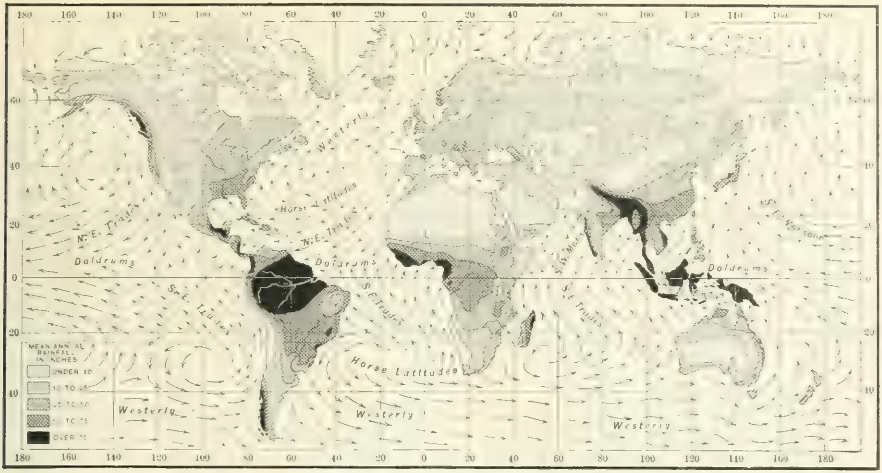


Diagram showing the Chief Winds of the World and the Average Rainfall

tudes in the northern hemisphere, the other south of the horse latitudes in the southern hemisphere. Consequently, there is a fairly steady flow of air from the horse latitudes toward the poles as well as toward the equator. In the northern hemisphere, the flow comes from the south-west; in the southern hemisphere, from the north-west. The winds which result are commonly known as the *Prevailing Westerlies.* The prevailing westerlies blow over nearly the whole surface of the Temperate Zones. They are more variable than the trade-winds, particularly in the northern hemisphere, where there is a great deal of land.

The effect of large bodies of land upon winds is the next thing to be considered. Land heats more quickly than water and to a far higher temperature, when exposed to an equal amount of sunshine. If you have lain upon a river bank or lake shore after swimming, you will agree that this is true. Land also cools more quickly than water.

You can see at once what the result of this must be. The air lying over the land tends to become an area of comparatively low pressure during the summer time, and an area of high pressure during the winter. Consequently, in the higher latitudes, where the difference in temperature between bodies of land and water is most marked, the wind blows from the ocean toward the land during the summer and from the land toward the ocean during the winter.

This is true to a certain degree of all the continents. The finest examples of such winds are the *Monsoons*, which blow over part of Asia. In the summer time the vast central plateau of Asia becomes excessively hot, and the air above it forms a great area of low pressure. Consequently, from May to September the wind blows steadily toward the continent from the Indian Ocean on the south and from the Pacific Ocean on the east. The winter monsoons blow just as steadily from the continent toward the oceans from November to February.

Rain.—You have often seen a washing put out on the line to dry. The clothes, even after being wrung out, are still wet to the sight and to the touch. But, as you know, after an hour or two in the air and sunshine, they are quite dry. The water which was in the wet clothes has passed into the air in the form of *water-vapour*, which, like the air itself, cannot be seen. Since clothes dry most rapidly on warm, dry days, we may safely infer that warm, dry air takes up moisture more rapidly than cool, damp air.

You have doubtless noticed the little beads of moisture that, on a hot summer day, gather on the surface of a pitcher filled with cold water. Probably you have wondered what caused them to gather there. They have come out of the air. The warm air of summer always contains more or less water-vapour. When the air is cooled by coming in contact with the cold pitcher, the water-vapour turns to liquid water and gathers in drops on the surface of the pitcher.

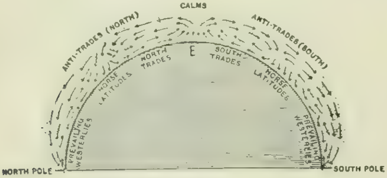


Diagram showing the Movement of Winds

From this we may learn two important facts. Warm air takes up, or *absorbs*, water in the form of vapour. The water-vapour turns again into liquid, or *condenses*, when the air is cooled.

Let us see now whether we can apply this knowledge. Keep in mind these two important facts. The warmer the air, the more water-vapour it can hold. When the air is cooled, this moisture condenses and appears as rain, or snow, or dew, or fog.

In the tropics, where the heat is greatest, the rainfall is very heavy. The heated air absorbs a great deal of moisture. As this moisture-laden air rises, it becomes cooled. Then the water-vapour condenses and falls in heavy showers upon the earth.

We have already seen that the belt of greatest heat shifts north and south of the equator with the vertical rays of the sun. In this hot belt showers of rain are of daily occurrence.

Explain now why the land of the Negroes in Equatorial Africa has a rainy season and a dry season instead of summer and winter.

The trade-winds blow toward the equator. They grow warmer as they approach it, and so they absorb moisture during the whole of their journey. This is not condensed until the air rises and is cooled above the central hot belt. Consequently, the trades are dry winds and bring no rain to the lands over which they blow, unless there are mountains in their path. Then the wind is forced into higher levels, becomes cooler, and gives a copious rainfall to the land lying upon the windward side of the mountains.

When the trades have come a long distance over land, they become so dry that, instead of bringing moisture, they rob the land of the little it possesses. The parched ground is bare except for scattered plants of the few varieties which can live with very little moisture. Such an area is called a *desert*. The greatest desert in the world is the *Sahara Desert* in North Africa. It lies in the path of the north-east trades.

Winds which blow over the ocean toward land reach it well laden with moisture. If these winds are cooled sufficiently to cause condensation, heavy rains result.

In Ontario the usual westerly breezes are sometimes interrupted by steady east winds, which bring heavy rain with them. These east winds bring some of the water of the Atlantic Ocean for hundreds of miles, to let it fall at last upon the broad fields of the province.

You have read of the monsoons of Asia. They, too, bring with them the priceless gift of rain. Before the summer monsoons begin to blow, the fields of India and China are parched and dry. Then comes the wind from the great oceans. The rain falls heavily over the land and waters the crops which nourish hundreds of millions of people. Unhappy, indeed, is the land when the monsoons are weak! Then the crops fail, and famine takes its toll of the crowded population.

The winds, as you have seen, hold within their grasp the power to make a garden or a desert.

THE OCEAN

Ocean Life.—Although we often speak of the sea as a "waste of waters," yet the ocean teemed with life long before land animals or plants made their appearance upon our planet. Remains of sea-weeds and marine animals, which are known as *fossils*, are found in older rocks than any which contain fossils of land life. To-day the ocean is the home of an incredible number of plants and animals. As a matter of fact, there is a far greater number of them, and a much larger variety, in the sea than upon the land.

Nor should we forget the life upon the ocean. Many varieties of birds obtain their food from it and spend the greater part of their existence either flying over it or swimming on its surface. Among the best known are the graceful gull, the awkward penguin, greatest of all ocean swimming birds, and the huge albatross, largest of all sea-birds.

The vegetation of the sea ranges from tiny plants, too small to be seen without the help of a microscope, to huge growths, which would measure a quarter of a mile in length if stretched out straight.

The *Red Sea* owes its name to the fact that enormous numbers of tiny, carmine-tinted plants thrive in its waters. These sometimes rise to the surface and tinge the water for miles.

Sea-weeds grow in all latitudes, even in the polar seas. The larger varieties cling to the rocks in shallow water close to land, or float unattached in quiet areas of deep water. They form marine forests, in which dwell countless millions of sea-animals, such as molluscs, jelly-fishes, sea-worms, and crabs, as well as fish of all sizes which prey upon these animals and upon one another.

Some varieties of sea-weed provide palatable food for men. The Irish peasant eats sea-weed as a relish with his potatoes. The Scottish fishermen are fond of a certain kind, known as dulse. The natives of the South Sea Islands, the Chinese, and the Japanese are all fond of similar sea-food.

Sea-weed serves man in other ways also. Paper can be made from it. Some valuable chemicals, such as iodine, can be extracted from certain species of it. From other varieties the Japanese make a strong glue, with which they stiffen the paper used for making fans, screens, hangings, and the like. Sea-weed is a good fertilizer, and much is used for this purpose by farmers near the coast.

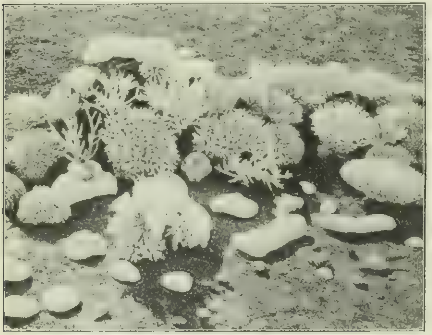
The array of animal life which the ocean presents is so vast that we cannot hope to learn more than a very little about it. It ranges from microscopic animals of the simplest type to the huge whale, the largest of all living creatures. The most we can do is to learn something about the ocean animals which are especially useful to man.

Sponges being dried at Nassau, Bahamas

Sponge-fishing is an important industry in the Bahamas.

The sponges which we buy at the drug store are really the skeletons of sea-animals of a low type. Sponges are found chiefly in the warm waters of the tropical seas. They are gathered by divers, or by men in small boats, who tear them from the sea-bottom with long poles. The sponges are put through a long process of rotting, beating, rinsing, and bleaching, before they are ready for the market.

In the warm waters of the tropical seas lives another creature, stranger still. The coral polyp is a very tiny sea-animal, which builds up its minute body with lime extracted from the sea-water. The beautiful coral, which you probably have seen, consists of the bodies of millions of coral polyps. The bodies of these polyps form massive foundations of coral in the shallow water close to the coast of a continent, around an island, or upon a submarine volcanic peak. The skeletons of successive generations of polyps heighten the reef of coral until its top rises above the waves. Fragments of shells, pieces of coral, and sand, are piled up by the waves on or behind the reef, so that new land is made. In this manner *coral islands* are formed. Certain plants, particularly the cocoa-nut palm, flourish on these islands. A great many even form suitable homes for men.


Coral, off the Coast of Australia

The red coral of which necklaces and other ornaments are made comes chiefly from the shores of *Sicily* and *Sardinia*, in the Mediterranean Sea. The gathering, cutting, polishing, and mounting of coral provides work for many men in these islands and in southern Italy.

The pearl oyster provides us with an even more beautiful substance than coral. These oysters coat the inside of their shells with a bright, iridescent covering. This lustrous substance we call mother-of-pearl. Pearls are composed of the same substance deposited about some irritating object, such as a grain of sand, which has found its way inside the animal's shell.

Pearl oysters are found in the warm waters of the tropics. They are obtained by divers, usually natives, who are wonderfully expert swimmers. The oysters are brought ashore and opened. Many contain tiny pearls known as "seed pearls." Occasionally a lucky pearler secures one of the great, lustrous gems which are among the most beautiful and precious of all jewels. The pearler depends mainly upon the shells, however, for his living. They are in great demand and command a good price. They are used for making buttons and many other small objects in which a hard, beautiful surface is desired.

Most of us, however, are more interested in the common oyster, which is so delicious as food. Vast quantities of these are consumed annually in Europe, North America, Australia, and Asia. The people of London, England, eat more than a billion oysters every year. Yet the number consumed by man is probably not so great as the number eaten by the many varieties of sea-animals which consider the oyster a dainty titbit. Fortunately, oysters multiply very rapidly. A single oyster lays from 16,000,000 to 60,000,000 eggs in one season. The eggs soon hatch into tiny oysters no larger than a needle point. Oysters reach their full growth when they are three or four years old.

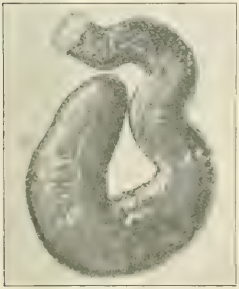
No list of sea delicacies would be complete unless it included the lobster and his close relatives, the crab, the shrimp, and the prawn. All these belong to a single family with hard, armour-like shells. The lobster is caught with traps baited with meat or dead fish and set on the bottom not far from shore. Each trap is big enough to hold

A Lobster Hatchery, Digby, Nova Scotia

several lobsters. Every few days the traps are hauled up and emptied. The lobsters are kept in floating cages until enough are caught for a shipment to the market. The east coast of Canada is famous for its excellent lobsters.

The Chinese are particularly fond of a curious kind of sea-food, which, probably, you would not like. This is *bêche de mer,* or *trepang,* a large sea-slug found principally around the coral islands of the tropics. These creatures look much like big cucumbers two to three feet in length and two to four inches thick. They are picked up by the fishermen at low tide. After being cleaned, they are boiled, dried, and smoked. Then they are shipped to China, where they command a big price.

Salmon Fleet, Skeena River, British Columbia



Trepang or Sea-slug

All these, however, are but slight contributions to the food supply of man when compared with the enormous quantities of fish which the ocean yields. Thousands of millions of pounds are taken annually, and the supply seems inexhaustible. Fish, like oysters, multiply very rapidly. A single codfish lays annually 3,000,000 eggs or more. You can see that countless cod may be eaten by other fish or caught by man, and still there will be an abundant supply.

Among the commonest of the food fishes are the cod, the mackerel, the salmon, the herring, the halibut, the haddock, and the sardine. This list names only a very small number of the varieties of sea-fish which are caught for food. Southern China, for instance, has so many varieties that the Chinaman may have a different kind of fish for breakfast every day in the year.

You have already read of the seal and the walrus, which help the Eskimo to live in his frozen land. One kind of seal, also, is hunted by white men for its beautiful fur. The hide of the walrus makes magnificent leather, and its large tusks are valuable as ivory.

Whaling used to be one of the most important of marine industries. The oil obtained from the fat of the whale was very valuable, and the whalebone brought a good price. Lately, however, the increasing use of mineral oil and of metal substitutes for whalebone has made whaling much less profitable, and comparatively few ships are now used for this purpose.

A stranded Whale, Coast of British Columbia

Homer, the great poet of ancient Greece, sings of the "unharvested sea," and so, doubtless, it was in those old days, before man conquered the ocean and exacted from it the tribute which is his due. Now, however, the harvest of the sea ranks second only to the harvest of the land, and the reaping of that harvest gives occupation to hundreds of thousands of men all over the world.

Sea-water.—The water of the ocean is not fresh and sweet like the water of our rivers and lakes. It tastes bitter, and increases thirst instead of slaking it. Ocean-going vessels have to carry with them their supply of drinking water. There is no worse fate for a sailor than to be cast adrift in a small boat without a supply of fresh water, with

> "Water, water, everywhere,
> Nor any drop to drink."

About a twenty-fifth part of sea-water is not water at all, but consists of a number of substances dissolved in the water. You can make sea-water in your own home. Buy a package of sea-salts at a drug store. Add one spoonful of the salts to about twenty-four spoonfuls of fresh water. Stir the water around until the salts have disappeared. The solution which you have made is very much the same as sea-water taken right from the ocean. If you cannot get sea-salts, use common salt instead. Almost four-fifths of the sea-salts is just common salt.

If you place the sea-water upon the stove and boil it gently, the water gradually boils away. The salts, however, remain in the bottom of the dish. Salt does not evaporate like water.

When the rain falls upon the earth, some of it soaks through the soil, to reappear again in springs. Some of it runs over the surface of the ground into creeks and rivers. The soil contains quantities of the same salts which are found in the sea-water. As the rain-water passes through or over the ground, it dissolves some of these salts which the soil contains. Rivers all over the world are pouring this water into the ocean. In this way salts are being brought constantly to the ocean.

You have already seen how the air is continually absorbing water from the ocean, and how the winds carry it to land, where it falls as rain. You have just learned that the air cannot absorb salt, for, when our sea-water was boiled, the salt remained after all the water had passed into the air. Can any of the salt brought to the ocean by rivers be carried back to the land by the winds? The ocean is daily receiving more salt, but it loses none.

Part of the world's supply of salt is obtained by evaporating sea-water and collecting the salt which is left. This method is used chiefly in those regions of the world where the sun is hot enough to evaporate water quickly; for instance, on some of the Islands of the West Indies and along the shores of the Mediterranean Sea.

A much greater quantity of salt is obtained from deposits buried deep in the earth. This salt, too, is really a gift of the ocean. Long, long ago the land was covered by the ocean. When the land emerged above the waves, thick layers of salt were left in the low places which were the last to become dry. In the course of time these salt-beds were buried deep in the earth. Gradually the salt was pressed into a hard mass. Such salt we call rock-salt.

There are many such deposits of salt in the world. Very large salt-beds have been found in south-western Ontario. The salt contained in these beds is exceptionally pure. It is obtained by boring holes down to the layer of salt, which is more than 1,000 feet below the surface of the ground. Then water is forced down the shaft. It dissolves the salt, forming a strong brine. The brine is pumped out and evaporated. Then the salt is purified and boxed or bagged for the market. You have doubtless seen packages of this salt at your grocer's and possibly use it at every meal.

Thus, although sea-water is unfit to drink, we must remember that its very bitterness is a sign that it holds within it the salt which man prizes so highly for seasoning and preserving his food. How tasteless and unappetizing our meals would be without it! Salt is so common and so cheap in our country that we use it freely and without a thought of how keenly we should miss it. In some parts of Africa salt is so scarce that it is used in trade instead of money. In Abyssinia, it is said, men carry about little sticks of rock-salt and suck them, just as Canadian children suck sticks of candy. When an Abyssinian gentleman meets a friend, he offers him his salt-stick to lick. He can imagine no finer treat.

The Ocean Floor.—The oceans lie in great basins, or troughs, between the continents. The floor of the ocean is, for the most part, a vast plain, lying about 12,000 or 15,000 feet below the surface. This plain is covered with a deep layer of fine, white particles, forming a substance called *ooze*. The ooze consists of the skeletons of myriads of tiny animals. These are so small that a microscope is needed to see them at all. During their lives they remain close to the surface of the water, but as they die, their bodies sink to the bottom. In this way a thick coating of chalky material has accumulated over the ocean floor. The famous chalk cliffs of England and France were once a part of this ooze at the bottom of the sea. In the course of ages they have been raised high above the water, and now form cliffs, which are visible for miles over the sea.

This great plain of the ocean floor is not entirely unbroken. Here and there are deep depressions, in some of which the bottom is more than five miles below the surface. There are also a number of ridges and hills rising from the ocean floor. These have been formed by lava poured out by volcanoes under the water. In many cases the volcanic action has been so violent and the mass of lava ejected so great that peaks have been formed which are higher than the water. These form volcanic islands. The islands of Japan are examples of such a formation.

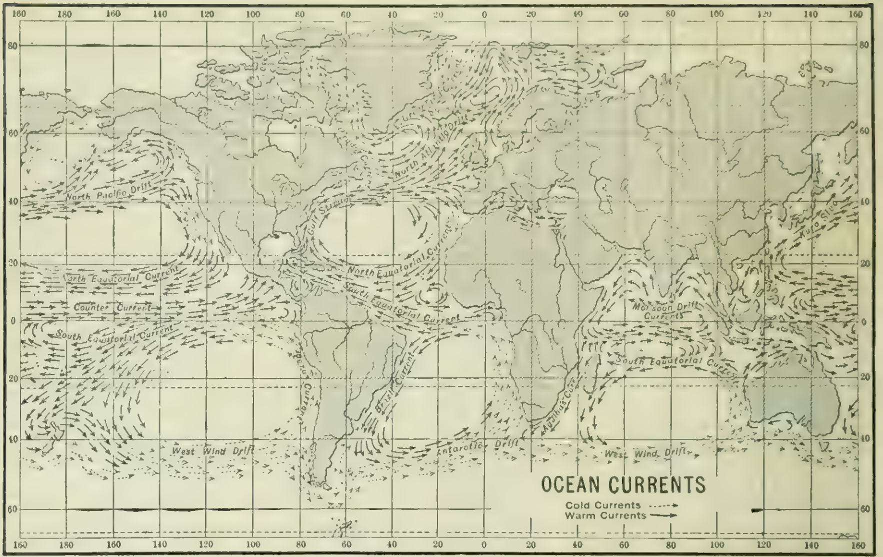
The deep trough of the oceans does not extend right to the coasts of the continents. The sea-floor rises rather abruptly at a varying distance from the shore, so that there is a shallow area surrounding each continent and extending for some distance out from the coast. The floor of this shallow area, over which the water is usually not more than 600 feet deep, is called the *continental shelf*. The continental shelf is narrowest where lofty mountains border the sea.

Most of the islands which are close to a continent are really high places on the continental shelf. The British Isles are part of the continental shelf of Europe. Newfoundland stands on the continental shelf of North America. Find on the map other islands which form part of the continental shelf of our continent.

Currents.—We speak of the land as *terra firma*, that is, the solid land. We speak also of the restless ocean, and with equal reason. We can see the movements of the water upon the surface. Beneath the surface, too, there is a constant movement, although we cannot see it. The water of the ocean is never still.

Water, like air, becomes lighter when warmed and heavier when cooled. Whenever a body of water is heated in one place and cooled in another, differences of density are produced, which cause a movement of the water. The heated water tends to move along the surface toward the cooled area, while the cooled water flows in the opposite direction below it. In the ocean there is a slow but steady interchange of water between the hot equatorial belt and the cold polar seas. The dense water of the Antarctic and Arctic Oceans keeps settling down to the bottom. Then it flows off in the lower levels of the ocean toward the equator. There it slowly rises again to the surface, becomes warm, and moves back toward the poles.

This constant though almost imperceptible movement of the ocean water is of great importance. Because of it the tropical seas are cooler than they otherwise would be and the polar seas warmer. The winds which blow over them are similarly affected. This slow, steady circulation of the ocean water is one of the reasons why the ocean exerts a moderating influence both upon the extreme heat of the tropics and upon the severe cold of high latitudes.



Map of the World showing the Ocean Currents

There are, however, even more important movements of the ocean water. In each of the three great oceans are two immense systems of surface currents. These currents are of practical importance, partly because they have a certain influence upon sailing and steamship routes, but chiefly on account of their indirect influence upon climate. They determine, to a certain extent, the climate of the coasts along which they pass, by raising or lowering the temperatures of the winds which blow over them toward the land.

The trade-winds of the Atlantic, covering two belts parallel to the equator, drive before them two westward currents, called the *North* and *South Equatorial Currents*. The South Equatorial Current strikes the wedge-like coast of Brazil and is split in two. One part turns south and flows down the east coast of South America until it reaches the latitude of the westerlies. These turn its course and drive it eastward to the African coast. There it turns and flows northward toward the equator until it rejoins the South Equatorial Current in the trade-wind belt. In this way is formed a great whirl, or eddy, of water, two to three thousand miles wide in the South Atlantic. This is called the *South Atlantic Eddy*. It moves in the direction opposite to that of the hands of a clock, and so we say it flows *counter-clockwise.*

Brazil Current

South Atlantic Drift

Guinea Current ↗

The other part of the South Equatorial flows through the *Caribbean Sea* into the *Gulf of Mexico*. The North Equatorial also sends part of its flow into the Caribbean Sea, but most of it turns northward before reaching the West Indies.

The level of the Gulf of Mexico is raised by the great influx of water poured into it from the south by the equatorial currents. The surplus water flows out through the *Strait of Florida* and is known as the *Gulf Stream*,—the most famous ocean current in the world. It forms a vast river of warm, blue water, sixty to eighty miles wide and several hundred feet deep. Its bright blue is so different from the dark green of the rest of the ocean that sailors can often actually see the edge of the stream as they enter it.

The Gulf Stream turns sharply to the north just outside the Strait of Florida and sweeps along parallel to the coast. It gradually becomes wider, shallower, and cooler. It disappears entirely as a distinct current when it reaches the latitude of the prevailing westerlies.

The westerlies keep driving the surface water of the North Atlantic across toward Europe. This current is called the *North Atlantic Drift.* Off the coast of Spain most of the North Atlantic Drift turns southward, and, under the name of the *Canaries Current,* flows toward the equator until it rejoins the North Equatorial Current. The greater part of the rest of the North Atlantic Drift is swept north-eastward past the British Isles and along the coast of Norway and loses itself in the cold polar waters to the north.

The North Equatorial Current, the Gulf Stream, the North Atlantic Drift, and the Canaries Current form another vast eddy in the North Atlantic. It moves in the same direction as the hands of a clock, and so we say it flows in a *clockwise* direction.

The circulation of water in the Pacific Ocean is very similar to that of the Atlantic, although, of course, on a much larger scale, There is a clockwise eddy in the North Pacific, and a counter-clockwise eddy in the South Pacific. A warm current, called by the Japanese the *Kuro Sivo,* or *Black Stream,* flows northward along the east coast of Asia. It corresponds pretty closely to the Gulf Stream in the Atlantic.

The part of the Indian Ocean lying south of the equator contains an eddy similar to those of the South Atlantic and the South Pacific. North of the equator the circulation of the Indian Ocean is determined by the monsoons. In the summer, when the south-west monsoon is blowing, the eddy moves in a clockwise direction. In the winter, the north-east monsoon reverses the direction of the eddy, which then moves in a counter-clockwise direction.

The water in the centre of these great eddies is comparatively quiet. In the centre of the North Atlantic Eddy is a great expanse of calm water, thick with floating sea-weed. This is called the *Sargasso Sea,* which means the Sea-weed Sea. There are similar Sargasso seas in the centres of all such eddies. The one in the North Atlantic is the best known.

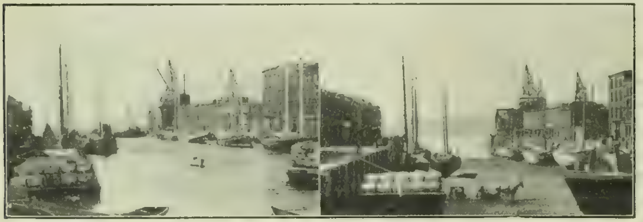
Besides the currents which form the eddies, there are two important cold currents flowing from the Arctic Ocean toward the equator. The *Labrador Current* flows through *Baffin Bay* into the Atlantic and creeps down the coast of North America. It meets the Gulf Stream near Newfoundland. The meeting of the warm moisture-laden air above the Gulf Stream with the colder air over the Labrador Current causes the fogs which are so frequent in that region. A very similar cold current creeps down the east coast of Asia.

These currents have little direct influence upon the climate of the coasts along which they pass. They affect climate only by warming or cooling the winds which blow over them toward the land. In the northern hemisphere their influence is great. The east coast of Asia is colder than the west coast of Europe, to which the North Atlantic Drift brings the warm water of the Gulf Stream. In North America the west coast has a more moderate climate than the east, as the prevailing westerlies are warmed during their passage over the North Pacific Drift.

The Tidal Bore in the Petitcodiac River, Moncton, N.B.

Tides.—The water-line along the shores of our lakes does not change very much. Although there is a slight shifting of the water-level from season to season or from year to year, it is usually so little that we do not notice it.

Along the sea-coast the water-line is constantly and perceptibly changing. Twice daily the water reaches high-water mark, and twice slowly recedes to low-water mark. If the shore slopes down gently, the receding water leaves a wide strip of the bottom exposed, so that one may walk far out over the ground that was covered with water only a few hours before. At every place on the sea-coast, high and low water succeed each other at intervals of about six and one-quarter hours.



High Tide and Low Tide in the Harbour of Saint John, New Brunswick

This rise and fall of the water we call the *tide*. The times of high tide follow each other quite regularly at an interval of about twelve and one-half hours. The high-water mark and the low-water mark vary, however, from day to day. The difference between the two is greatest twice a month—once, about the time of the full moon, and again at the time of the new moon, for then the high tide is highest and the low tide lowest. It is least, also, once a fortnight, at a time just midway between full and new moon. In the open oceans, the tidal range, or difference between low and high tide, is not more than two to five feet. When, however, the tides dash against land or enter deep gulfs or river-mouths, the accumulating tidal waters sometimes reach a great height. The average height of the tide along the eastern coast of North America is from nine to twelve feet. It reaches its greatest height in the *Bay of Fundy*, Nova Scotia. Up this long, V-shaped channel the tidal water rushes headlong in a foaming wave. At the mouth of the bay, it rises to a height of about eighteen feet above low tide. It increases farther up the channel until it reaches the almost incredible height of fifty to seventy feet.

The channels leading into some harbours are so shallow that big ships can enter them only at high tide. A thorough knowledge of the tides is necessary for every practical navigator.

CLIMATE AND LIFE

Weather and Climate.—By weather we mean the condition of the atmosphere at a particular time. So we say, "It is fine weather *to-day*," or "We had warm weather *last week*," or "We have had much bad weather *this year*." The atmosphere may be hot or cold, still or moving, cloudy or clear, wet or dry. So we may speak of the weather as being warm or hot, calm or windy, cloudy or clear, rainy or dry. We may also describe it by its effect upon us, and so we speak of it as being invigorating or enervating, agreeable or unpleasant, healthful or unhealthful.

By the *climate* of a place we mean the usual or *average* state of its atmosphere, without limiting our description to any definite time. We use the same terms when speaking of climate that we do with reference to the weather. When we say that Florida has a warm climate, we mean that the weather is usually warm there. It does not mean that there is never cool or even cold weather in Florida. There is some cool weather, but it is unusual.

You already know the chief causes of differences of climate. Explain how latitude, altitude, winds, ocean currents, and distance from the sea influence climate.

An Elk approaching to attack another Elk

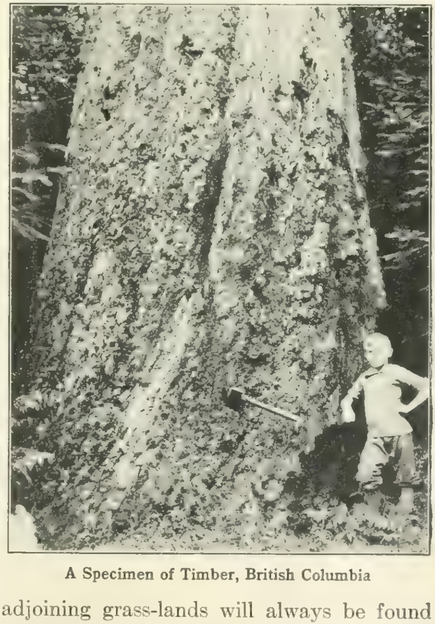
Plants and Animals.—Wherever there is enough soil, heat, sunshine, and moisture to allow them to grow, plants are found. Many plants are of great importance to man, since they provide him with materials for food, clothing, shelter, and tools, and because they provide food for animals, which also help to supply his needs.

All plants do not require the same kind of soil, or the same amount of heat, sunshine, and moisture.

Some flourish in the warm, moist regions of the earth; others cannot endure the continuous heat of the tropics. Some are adapted to a dry, hot climate; others to a wet, cold climate. Therefore plants vary widely in different parts of the world.

We cannot attempt to describe fully the many varieties, or even the chief varieties, of plants found upon the earth. We may, however, distinguish three main types of vegetation areas: *forest areas,* in which there is sufficient heat and moisture to allow the growth of trees; *grass-lands,* where, owing to insufficient moisture, trees are absent, but where grasses find sufficient moisture; *deserts,* in which, since there is little or no moisture, only a few plants well adapted to withstand drought can grow.

These great vegetation areas, of course, are not separated from one another by definite lines. Between dense forests and adjoining grass-lands will always be found a transition area, in which both trees and grass are found. Between grass-lands and deserts there is a similar transition area, in which the grass gradually grows thinner and poorer as the desert is approached.



A Specimen of Timber, British Columbia

Now let us make a survey of the world to see where, for the most part, these vegetation areas occur.

In the extreme north the great ice-cap surrounding the pole prohibits all plant life. This area is, therefore, a real desert. It is called the *ice-desert.*

Beavers cutting down a Tree

Farther south the sun is warm enough to thaw the surface of the ground during the short summer, and a few lowly plants, chiefly mosses and lichens, can grow. In this area live the Eskimos, of whom you have already read. The desolate, frozen plains of the far north are called *tundras.* They are found along the northern coasts of North America, Europe, and Asia. The inhabitants of the tundra depend upon animals for food and clothing, as the land produces little or no vegetation fit for human food.

A Camp on the Margin of a Spruce Forest, Yukon Territory

Still farther south, in the northern part of the Temperate Zone, is a broad belt of forest. The trees composing it are adapted to life in a cold climate. Among them are found the pine, the hemlock, the spruce, the poplar, the birch, and the willow. There are in the northern forest many fur-bearing and other animals such as the elk and the moose, and hunting is the chief occupation of its few inhabitants. Lumbering is also carried on along its southern border, where the trees are largest and nearest to settlements of people.

South of the northern forest is a forest of a different character, in which broad-leaved hardwoods, such as the oak, the beech, and the maple, are found. These trees require much rain. Consequently, these hardwood forests are found chiefly along the coasts, or in inland areas into which the rain-bearing winds can penetrate. In the drier districts, as in the central part of North America, are found broad grass-lands.

Buffalo in the Rocky Mountains Park, Alberta

By far the greater part of the North Temperate Zone consists of the areas of northern forest, hardwood forest, and grass-lands. Where the forest has been cleared, or where the grass-lands have been brought under cultivation, crops of grain, fodder plants, fruits, and vegetables are grown. The cultivated plants of the Temperate Zone are the best food plants of the world. The grass-lands provide rich pasturage for sheep, horses, and cattle. In addition, the forest provides plenty of good lumber for building and tools. These are some reasons why the most progressive and prosperous peoples of the world live in the Temperate Zone.

The Temperate forest changes in character toward the Tropic of Cancer. Many trees, unknown farther north, such as palms and palmettos, make their appearance. Such a forest is called a *sub-tropical forest*.

The regions near the Tropics have but one season of heavy rainfall a year. At that time grass and flowers spring up with great rapidity and grow to immense size. But after the rains are over, the great heat soon withers the vegetation. The dried grass, however, still provides nourishing food for animals. Such tropical grass-lands are called *savannas*. They are often dotted with clumps of small trees, giving them a beautiful, park-like appearance. The savannas are the home of many large, grass-eating animals, as well as the flesh-eaters which prey upon them. Hunting and cattle-raising are the chief occupations of the people of the savannas.

In the Torrid Zone, wherever the rainfall is abundant, the great heat and bright sunshine favour rapid growth, and tangled forests and jungles extend for many miles. You have already read of such a tropical forest. In them both people and ground animals are comparatively few, owing to the denseness of the forest. There are, however, many birds and insects, and a large number of animals adapted to life among the trees. There are tree-frogs, tree-snakes, tree-lizards, and monkeys in abundance.

Desert Vegetation

Cocoa-nut Trees

As we pass through the Southern Hemisphere from the south pole to the Torrid Zone, we find the same vegetation areas in about the same order—ice-desert, tundra, temperate forest, sub-tropical forest, savanna, and tropical forest.

There are, however, several large regions where vegetation is lacking almost entirely. Deserts are found on the leeward side of great mountain ranges which intercept rain-bearing winds, and in those parts of the trade-wind belts where the winds come over land. The vegetation of such desert areas consists entirely of plants able to endure long periods of drought. The cactus, for instance, has thick, fleshy stems in which it stores up water. Since there are so few plants in the desert, there can be little animal life there. There are only a few small animals and the snakes which prey upon them, and some insects and the lizards and birds which eat them.

Thirty Acres of Pelicans on an Island near Peru

Wherever underground water approaches the surface, or a stream flows into the desert from some wetter district, the vegetation becomes more abundant. Low bushes and dwarf trees, with occasional stretches of grass-land, are found. Such an area is called a *semi-desert*. It generally forms a border around the almost lifeless desert. In it live a few people, who wander about with their flocks in search of pasture.

Thus far, we have considered chiefly the effects of latitude, winds, and rain upon vegetation. In mountainous regions, altitude also plays a great part. A snow-capped mountain in the Torrid Zone shows a series of different vegetations. At its base is a dense, tropical forest. Above this is a belt of temperate forest. Still higher up the trees become dwarfed, and there are many shrubs and bushes. In the very high valleys there are meadows of rich grass. Between the grassy meadows and the level of perpetual snow, is a belt of mosses and lichens, much resembling the tundra of the far north. Above the tundra belt is a true ice-desert. In climbing such a mountain, we pass through a tropical, a temperate, and a cold zone, just as we should in passing from the equator to the pole. This, of course, is due to the fact that the temperature steadily falls as a greater height is reached.

NORTH AMERICA

THE CONTINENT AS A WHOLE

Map Questions.—What ocean is east of North America? West of it? North of it? What large bay is on the north coast? Name two big gulfs on the east coast and one on the west. What strait separates North America from Asia?

What is the largest island north of the continent? Name the bay and the strait south-west of this island. What peninsula lies between *Hudson Bay* and the *Gulf of St. Lawrence?* Name the island which partly incloses this gulf. What two peninsulas partly inclose the *Gulf of Mexico?* Where are the West Indies? Name the four largest islands of this group. What sea lies south of them?

What separates the *Caribbean Sea* from the Pacific Ocean? What is the narrowest part of North America? What two continents are joined by this narrow isthmus?

What peninsula partly incloses the *Gulf of California?* Is the southern or the northern part of the west coast of North America more broken? Where are the best harbours on the west coast?

How many highlands are there in North America? Name them. Which has the highest mountains?

Find the *Great Central Plain.* Between what highlands does it lie? What great river flows southward through it to the *Gulf of Mexico?* What river flows northward to the Arctic Ocean? What river flows eastward between these two?

Name the lakes which border the Laurentian Highland on the west. What group of lakes lies south of this highland? By what river are they drained?

What is the name of the plain between the *Appalachian Highland* and the Atlantic Ocean? Why are the rivers in this plain short?

What are the two largest countries of North America? Which of these is the larger? What country lies south of the *United States?* What river flows between the United States and *Mexico?*

How many countries are there in *Central America?* Name them. Where is *Alaska?* To what country does it belong? Name a large river which crosses Alaska. Into what sea does it empty?

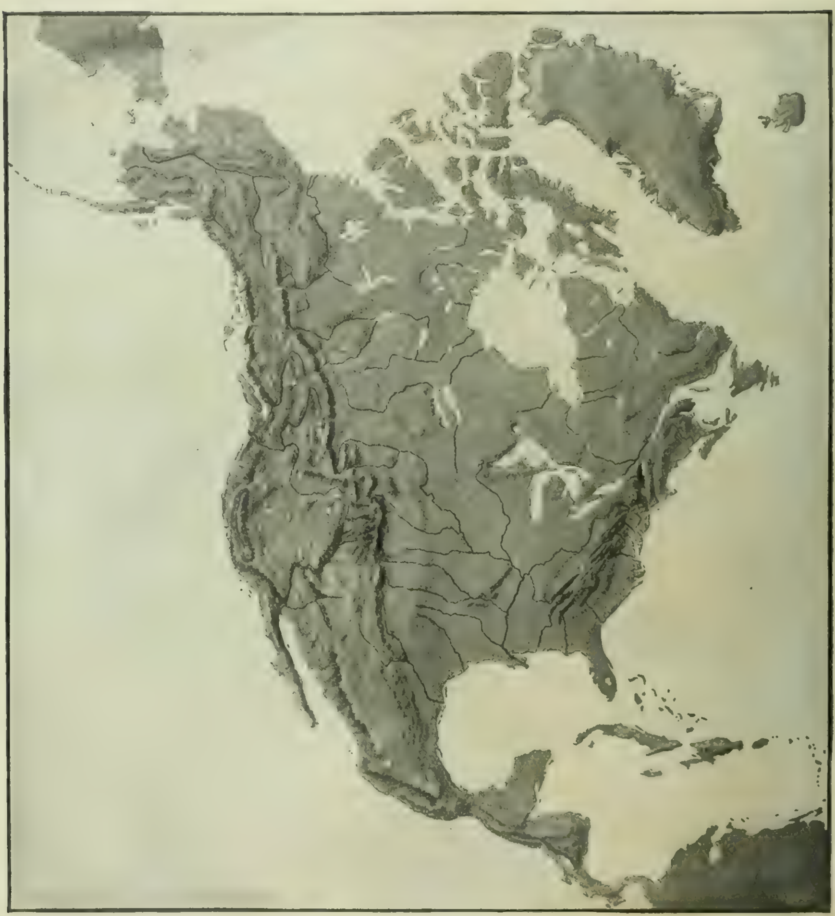
In what zone or zones is *Greenland* situated? Alaska? Canada? The United States? Mexico? The West Indies? Central America? Give the boundaries of each of these countries. In what zone is the greater part of the continent? Why is this an advantage?

Shape, Size, and Situation.—*North America,* as its name implies, is the northern portion of the great land mass which forms the New World. It is roughly triangular in shape, being broad in the north and tapering toward the south. From north to south the continent extends over 72° of latitude—a distance of about 5,000 miles. Its greatest breadth from east to west is considerably over 3,000 miles. Its area is about 9,350,000 square miles—almost three times the size of Europe. It ranks third among all the continents in size. Asia and Africa are larger.

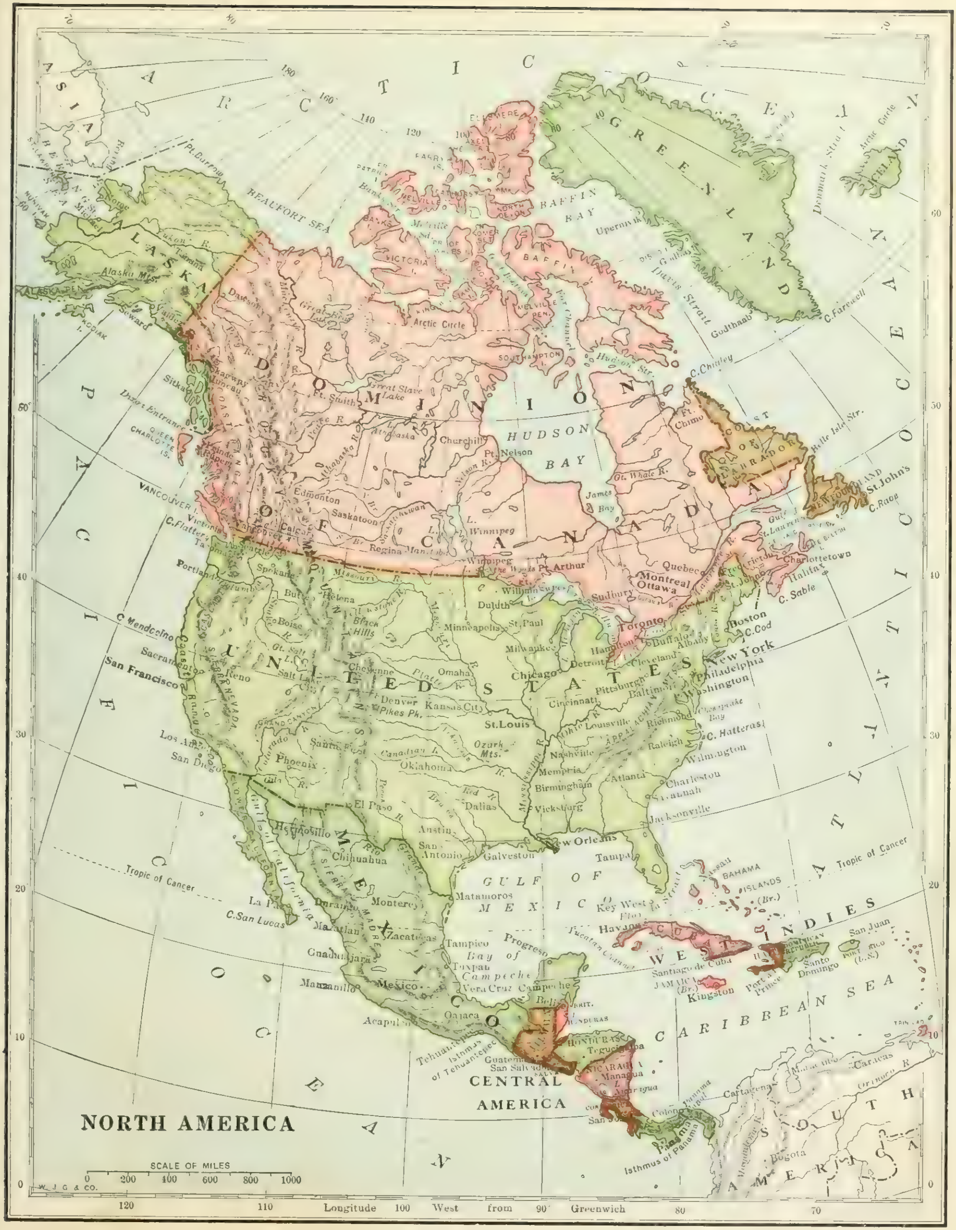
North America is well situated for trade with other countries. Its eastern coast looks over the Atlantic toward Europe, its western shore faces the east coast of Asia—the most productive and densely populated part of that continent. South American ports are easily reached, and a large trade is carried on between the two American continents. Sea-going trade has been helped by the *Panama Canal,* cut by the government of the United States through the *Isthmus of Panama.* Through it ships can pass from ocean to ocean without having to make the long voyage around South America.

The North Coast.—The north coast of the continent is washed by the Arctic Ocean, and therefore is almost valueless for commerce. A net-work of islands extends from the coast to within 500 miles of the north pole itself. With the exception of Greenland, which is a Danish colony, these islands belong to the *Dominion of Canada.* Their very scanty population consists entirely of Eskimos.

Hudson Bay, the largest and most important indentation of the northern coast, is icebound for several months of the year, and as yet has been little used for shipping. It is named after Henry Hudson, who discovered it while attempting to find a passage to Asia around the north coast of America.

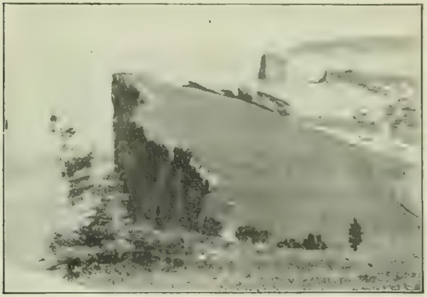


RELIEF MAP OF NORTH AMERICA



NORTH AMERICA

The discovery of the *North-West Passage*, as the sea-route north of America from the Atlantic to the Pacific is called, proved very difficult on account of the ice with which the straits between the northern islands are filled for almost the whole of the year. The names of many of the islands and channels recall to mind the men who dared and suffered much in these waters. Davis, Baffin, Franklin, and many others vainly endeavoured to win their way through to the Pacific. It was not until the year 1906 that this feat was successfully accomplished. In that year Captain Roald Amundsen, who later discovered the South Pole, reached the Pacific Ocean after a three years' voyage of great difficulty and peril. Amundsen proved that, although a north-west passage exists, its difficulties and dangers are so great that it can never become a commercial highway.

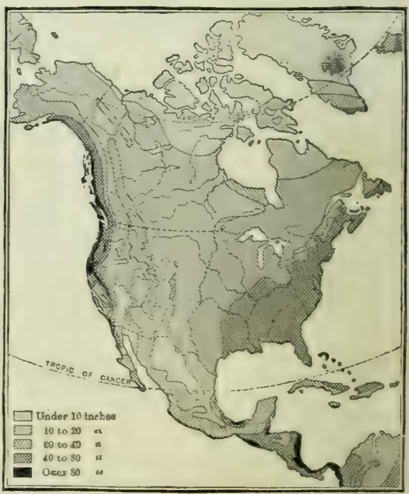


Percé Village, Gaspé Coast, Quebec
Parts of the Gaspé coast are very rocky.

The East Coast.—The northern portion of the east coast is rough and rocky. It contains many good harbours, ranging in size from small bays, just large enough to shelter a few fishing vessels, to magnificent harbours, such as those of Halifax and New York. Farther south the shore is low and sandy, and good harbours are scarce.

The continental shelf is very wide upon the eastern side of the continent. This shelf was once part of the coastal plain of North America, but now, owing to the gradual sinking of the eastern coast, it lies beneath the surface of the ocean. On this shallow submarine platform there is much plant and animal life. The *Grand Bank of Newfoundland* forms a part of the continental shelf. The Banks are the richest cod-fishing grounds in the world.

The two chief currents in the Atlantic along the eastern coast are the *Gulf Stream* and the *Labrador Current*. The Gulf Stream makes little difference to the climate of North America. To it, however, the *Bermuda Islands* owe their existence. These are the most northerly coral islands in the world. They lie in the midst of the Gulf Stream, and in its warm waters the coral polyps are able to live and thrive much farther north than they could were it not for the Gulf Stream.



Rainfall Map of North America

The Labrador Current, as you have already seen, causes dense fogs near Newfoundland. It also brings down with it many icebergs. These are huge masses of ice broken from the ends of the great glaciers which fill the valleys of Greenland. Both icebergs and fogs are dangerous to vessels. Ships are often delayed in their journey across the Atlantic by these menaces to their safety. To the Labrador Current, however, is due, to a great extent, the immense number of fish which throng the Newfoundland Banks. It brings down with it from the Arctic Ocean great quantities of small jelly-like plants called *plankton*, upon which many varieties of small fish feed. These fish, in their turn, provide food for the cod. The codfish upon the Newfoundland Banks could not exist without the microscopic plankton which the Labrador Current supplies in such abundance.

The West Coast.—The west coast, like the east coast, is very irregular in the northern section. There are numberless sounds and inlets, many of them forming fine harbours. A chain of islands fringes the whole of this part of the coast. Of these *Vancouver Island* is the largest and most important.

Toward the south the coast-line is almost unbroken. The only good harbour is that of *San Francisco Bay*. The *Gulf of California*, although large, is of little commercial importance, as the chief ports of Mexico are upon the coast of the Gulf of Mexico.

Along the Harbour, San Francisco, California

The Western or Rocky Mountain Highland.—The *Rocky Mountain Highland* begins in Alaska and stretches southward throughout the whole length of North America. It is comparatively narrow in the far north, but broadens rapidly to the south. It is widest at 40° N. latitude, where it stretches across one-third of the width of the continent. The whole of Mexico and Central America is within this highland, with the exception of a narrow belt of low land bordering the coasts.

The *Rocky Mountains*, which extend without a break from Alaska to Mexico, form the eastern edge of the highland in Canada and the United States. The western side is marked by a series of ranges rising close to the margin of the Pacific. Between the Rockies and these western ranges are several large plateaus. In the mountains are many valleys.

In the widest part of the highland is an immense depression, known as the *Great Basin.* It resembles an enormous, shallow bowl, the edge of which is formed by the high ground surrounding it. The rain which falls on the inner slopes of the Great Basin forms creeks and rivers which, following the slope of the land, flow toward the low ground. There the water gathers and forms lakes. A region such as this, in which the rivers flow into depressions which have no outlet to the ocean, is called an *area of interior drainage.* The water in the lakes in such an area is always salt, for the same reason that the water of the ocean is salt.

The prevailing wind over the northern half of the Western Highland is from the west. North of 45° the west coast has rain at all seasons, brought by the westerlies which sweep over the North Pacific Drift, referred to on page 49. The westerlies moderate the climate of the west coast of America, making it milder in winter and cooler in summer than that of the regions lying inland. During the winter they bring rain to the coast as far south as 23° N. latitude. The mountaingirt plateaus and basins have a very scanty rainfall, particularly in the south, where they lie beyond the influence of the westerlies. These are the desert lands of North America.

The vegetation of the Western Highland varies with latitude, rainfall, and altitude. That part of the coast which comes within the belt of the westerlies is densely forested with coniferous trees, of which some species, such as the Douglas fir, attain a very great size. Many of the higher peaks of the mountains are above the tree line. On them the forests rise toward grass-lands gay with flowers, which in turn merge into areas of bare rock and snow-fields. The arid plateaus and basins have a semi-desert vegetation. The most characteristic plant is the sage brush, while toward the south the thorny cactus is very common. The west coast of Mexico is too dry to support a tropical forest, and so savanna lands of mixed grass and woodland are found there.

Rocky Mountain Goats, Jasper Park, Alberta

There are many wild animals among the wooded mountains. The Rocky Mountain sheep, the Rocky Mountain goat, and the grizzly bear are the most characteristic of them. On the dry plateaus there are burrowing animals, such as the prairie dog. There, too, the rattlesnake is very common. Scorpions are numerous in the desert.

The Great Central Plain.—The *Great Central Plain* is divided by a slight elevation of land running from east to west close to the boundary between Canada and the United States. The southern portion slopes toward the *Gulf of Mexico*; the northern toward *Hudson Bay* and the *Arctic Ocean.*

The higher ground between the two great slopes falls gradually from west to east. Prove these statements by tracing the courses of the *Mississippi, Mackenzie,* and *Saskatchewan Rivers.*

The central plain of the continent, for the most part, is cold in winter and hot in summer. The winter temperature of the northern districts is very low, and the summers, though warm, are short. In the south both summer and winter are naturally much warmer. The rainfall occurs chiefly during the summer, when it is of greatest use for plant growth. During the spring and summer it varies from five to fifteen inches in different districts. The annual rainfall ranges mostly from ten to thirty inches.

The great plain of North America is one of the most fertile areas in the world. In the south cotton and sugar-cane are grown. Then comes a great belt of land in which Indian corn is the main crop. Farther north are broad stretches of wheat-land, which extend northward into Canada as far as the *Peace River*.

Most of the great plain is a natural grassland, wooded only along the courses of the rivers. North of the Saskatchewan River, however, the plain is thickly wooded. This forest is part of the northern forest, which covers the northern part of the continent right from Alaska to the Gulf of St. Lawrence.

Toward the west the ground rises in rolling plains toward the foot-hills of the Rockies. The plains lying right in the lee of the mountains are too dry, except in the northern part, to permit ordinary farming. When irrigation is employed, or special methods of farming are used to overcome the dryness of the soil, good crops may be grown. Much of this part of the plain is used for grazing great herds of cattle, and even the driest districts produce enough grass to support many large flocks of sheep.

East of the Mississippi the ground is very level for many miles, until it rises in gently rolling slopes into the Appalachian Highland. The soil of this part of the plain is particularly fertile, and some of the most productive farms in the world are found here.

The prairies were once the home of large herds of bison, or buffalo, as they are more usually named. As late as 1858, a traveller upon the western plains drove for ten days through a single continuous herd, and the prairie was black with moving animals as far as the eye could reach. But man needed for his own use the land over which they roamed. Railways were built, settlers came in ever increasing numbers, and the buffalo vanished before the westward advance of civilization. Another animal of the plains, the beautiful prong-horned antelope, still survives, but in sadly decreased numbers. The coyote, or prairie wolf, the most cunning of all wolves, has more than held his own, and his sharp bark and mournful howl are to be heard to-day almost anywhere on the western plains and in the foot-hills of the mountains.

The Indians of the plains were among the most picturesque and savage tribes of the continent. In the south and central regions, the Apaches, the Navajos, and the Sioux, the wild horsemen of the plains, and, farther north, the Crees, hunted over the high plains and the prairies. Now their old hunting-grounds are farms and ranches; the game has vanished; and the descendants of fierce warriors live peacefully upon their reservations.

The Appalachian Highland.—This highland is much smaller than the Rocky Mountain Highland. It is only about 200 miles wide, and consists of comparatively low, rounded hills, which are usually wooded. Both sides of the highland are well watered, for the greater part of the rainfall comes from storms which travel from the Gulf of Mexico to the north-east in a path parallel to the mountains.

In the north are several distinct ranges of low mountains. There is only one good route from the Atlantic Coast to the Great Lakes through these confused and tangled hills. This is afforded by the valleys of the *Hudson River*, and of its tributary, the Mohawk. The Hudson-Mohawk Valley early became the main highway of travel through the *Appalachian Highland*, and still retains its supremacy. The city of New York, the largest and wealthiest of American cities, owes much to its situation at the mouth of the Hudson River.

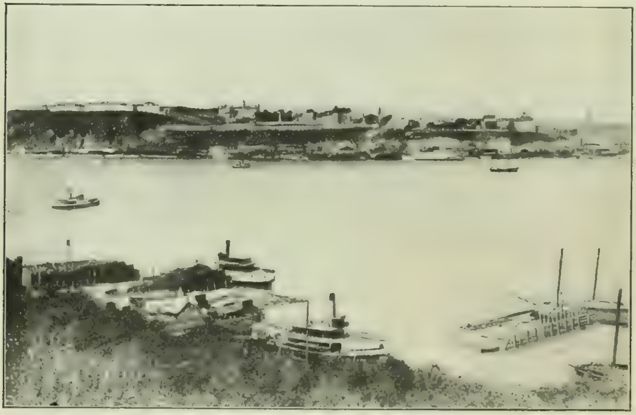
The Interior of a Railway Station, New York

South of the Hudson River the Appalachian Highland consists of a central belt of parallel, even ridges, running in a general south-west to north-east direction. Between the mountain ridges are fertile valleys. Across the ridges eastward-flowing rivers have cut narrow, transverse valleys, which are important lines of communication within the highland.

The most easterly part of the Appalachian Highland, called the *Piedmont Plateau*, presents a very steep face to the east, and below this lies a flat, coastal plain extending to the Atlantic. This *escarpment*, as such a steep descent from a plateau is called, marks the limit of navigation from the Atlantic, since the course of the rivers is broken by falls or rapids where they plunge down from the plateau to the plain. At the eastern edge of the plateau, known as the *Fall Line*, are located the chief cities and ports of this region. The rivers provide them with water-power.

The most westerly part of the highland, called the *Appalachian Plateau*, slopes west and north-west to the prairies and the *Ohio River*. This plateau is noted for its mineral wealth. It contains the greatest coal-fields in the world. There are also large deposits of iron, vast quantities of petroleum, and much natural gas.

The Atlantic Slope.—The plain lying between the Appalachian Highland and the Atlantic Ocean is very low and flat. It is quite narrow in the north, but broadens toward the south. It is well watered by many streams flowing from the highland. The coast is fringed with sand-banks and islands, behind which are many lagoons and marshes.


The Waterfront of the City of Quebec

In the marshland toward the south rice can be grown. There are also large sandy tracts, covered with pine forests. There is some good land, especially suited for the production of fruit, vegetables, and cotton.

The weather on the east coast of the continent is more variable than anywhere else in North America. North-easterly winds, passing over the cold Labrador Current, are usually accompanied by heavy falls of snow in winter and by cool rains in summer. South-easterly winds, coming from over the warmer North Atlantic Drift, bring rain and mild weather. North-westerly winds, blowing over the cold interior, bring clear, cold weather in winter. Their influence reaches far south, and killing frosts are not uncommon even in southern Florida.

The Laurentian Highland.—The *Laurentian Highland* is marked by the chain of large lakes which border it. This V-shaped highland incloses Hudson Bay and covers the whole north-eastern portion of the continent.

The Laurentian Highland is the lowest of the three highland areas. In fact, it is much more like a vast plain than a mountainous district. It was once much higher than it is now. Long ago it was covered with ice, and the rocks were worn down by moving glaciers. During the many centuries which have elapsed since the ice melted, the rivers have continued the work of wearing down the rock. Much of the fertile soil of the western plains and of the basin of the Great Lakes and the valley of the St. Lawrence has come from the rocks which once formed part of the Laurentian Highland.

The vast extent of this ancient highland is broken by many low, rounded hills. Between the hills are innumerable streams and countless lakes. Forest covers its whole area, except in the far north, where only mosses, lichens, and a few stunted bushes can withstand the severity of the climate.

Natural Resources.—Let us now sum up a few of the outstanding advantages of North America, which have contributed much to the rapid development of the continent.

The mineral wealth of the continent is unrivalled. Coal, iron, copper, nickel, gold, and silver are found in quantities unknown elsewhere. The coal-fields of the continent are estimated to be twenty times as large as those of Europe. Iron ore is found in many parts. The Rocky Mountain Highland produces immense quantities of gold, silver, and copper.

Gold-dredging, Bonanza Basin, Yukon Territory

The Laurentian Highland is very rich in minerals, and, although its resources are as yet little known, it is already yielding great quantities of nickel, gold, and silver from the mines of Northern Ontario.

The forest wealth of the continent is immense. The northern forest is providing much excellent timber and a great deal of pulp-wood for making paper. The trees of the western coast yield in abundance timber of the very finest quality. The southern forests of the Atlantic coast also contain much valuable timber.

No continent has a larger area of well-watered, deep, and fertile soil. The forest lands, except in the far north, become good farm lands when cleared. The plains of the centre of the continent produce great quantities of food-stuffs. The farmer of North America is the most prosperous agriculturist to be found anywhere in the world.

The Mississippi River and the St. Lawrence River, with the Great Lakes, form unexcelled waterways into the heart of the continent. The influence of these two great highways upon the development of trade can scarcely be over-estimated. Besides these, there are many other waterways which facilitate transportation.

No continent surpasses North America in variety and wealth of natural resources. Its people, for the most part, have taken full advantage of the wealth which lay close to their hands, and, as a result, are to-day a very prosperous, happy, and progressive people.

We Canadians have the privilege of owning almost half of this great continent. This means that we are among the fortunate peoples of the world. Each one of us should strive to realize how great a thing it is to be a citizen of Canada. Each one of us should have a thorough knowledge of all those things which make Canada, though so young a nation, second to none either in past accomplishment or in future prospect. No other of our geographical studies is so important or nearly so interesting as the study of our own land.

A Scene at the Canadian National Exhibition, Toronto

THE DOMINION OF CANADA

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Position, Extent, and People.—The *Dominion of Canada* comprises the northern portion of North America, with the exception of *Greenland*, *Newfoundland*, and *Alaska*. It extends to the Pacific Ocean on the west, the Atlantic Ocean on the east, the Arctic Ocean on the north. Upon the south a long, irregular boundary separates it from the United States. Most of the western portion of the southern boundary is in latitude 49° N.; but farther east it extends as far south as latitude 42° N. From these latitudes Canada stretches northward over half a continent, and far beyond, into the icy wastes of the Polar Sea.

This enormous block of land contains 3,684,723 square miles, an area only a trifle less than that of the whole continent of Europe, and considerably larger than that of Australia. Canada ranks third in size among all the countries in the world, being surpassed only by the Soviet Republics, including those in Asia, and by China.

The Coat-of-Arms of Canada

This immense country is divided into nine provinces and two territories. The provinces are grouped according to their geographical position. *Nova Scotia*, *New Brunswick*, and *Prince Edward Island* are called the *Maritime Provinces*, because they are closest to the Atlantic Ocean. *Ontario* and *Quebec* are known as the *Central Provinces*. Since *Manitoba*, *Saskatchewan*, and *Alberta* are situated in the great central plain of the continent, they have received the name of the *Prairie Provinces*. *British Columbia*, from its position on the Pacific seaboard, is called the *Pacific Province*. The *Yukon Territory* is named from the great river which flows through it, while the name *Northwest Territories* is due to the situation of these districts in the far north and west of Canada.

The population of Canada is very small when compared with the vast extent of her territory. It averages over three persons to each square mile. By far the greater number of the inhabitants live in a comparatively narrow belt of land, extending from coast to coast along the southern frontier, and comprising less than one-third of the area of the whole country. The climate of the far northern areas is so severe that the land there will never maintain a large population.

When Britain wrested the lowlands of the St. Lawrence from France, the population of that district was almost wholly French. Since that time the descendants of the French settlers have so increased in number that they now constitute one-quarter of the total population of Canada. Most of the French-speaking people of the Dominion live in the Province of Quebec, but there are some large settlements of them in the Maritime Provinces, Ontario, and the Prairie Provinces. After the conquest of Canada, a stream of British immigration set in, and has kept up ever since. Accordingly, the remaining three-quarters of the population is largely of English, Scottish, or Irish descent. There are, nevertheless, especially in the Prairie Provinces, quite a large number of immigrants from other European nations, and, in recent years, many citizens of the United States have crossed the border to try their fortunes in the Dominion. There are many Chinese and Japanese in British Columbia, and a few scattered elsewhere. The Indians, who once roamed over the whole land, are now largely gathered together in reservations and number only about 110,000. In the north about 6,000 Eskimos live along the coast and on the islands of the Arctic.

Surface.—Canada may be divided into

five clearly marked physical divisions, each having its own special characteristics. These are the *Acadian Region*, the *Lowlands of the St. Lawrence*, the *Laurentian Highland*, the *Great Central Plain*, and the *Great Mountain Region.*

The Acadian Region comprises the Maritime Provinces, together with the south-eastern part of the Province of Quebec. This region is really the northern extremity of the Appalachian Highland. It is a rolling country of hills and ridges of no great height. In the river valleys and along the coast are many extremely fertile areas of agricultural land. Much of the Acadian region was once heavily forested with timber trees, and lumbering, especially in New Brunswick, is still an important industry.

A Lumber Camp in New Brunswick

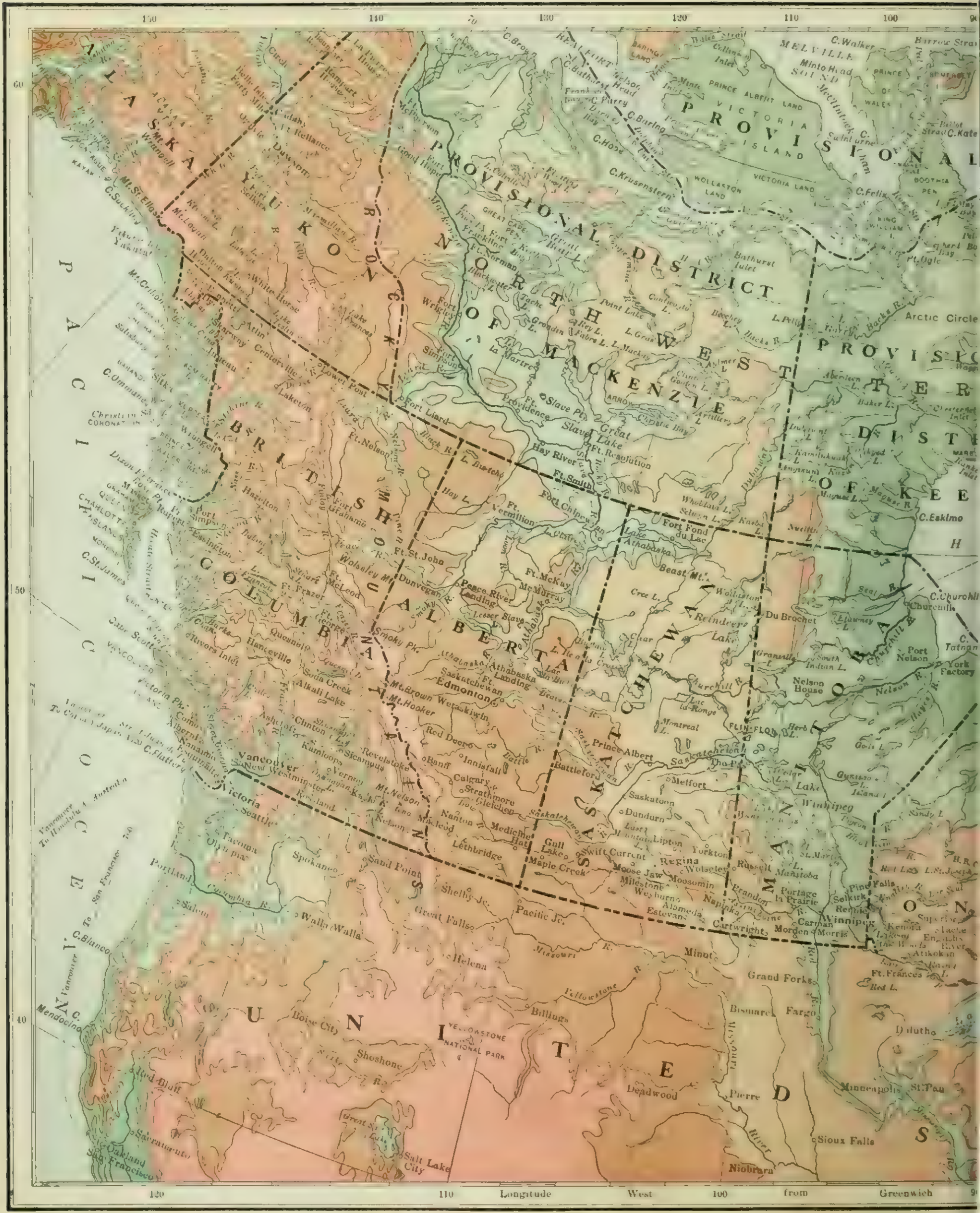
The climate, moderated by the proximity of the ocean, is not subject to such great extremes of temperature as the interior of Canada in the same latitude. The rainfall is heavy, ranging from an annual fall of sixty inches a year at Halifax to about thirty-five inches in western New Brunswick. The heavy snowfall in winter is a great aid to the lumbermen.

The Lowlands of the St. Lawrence Valley include that part of Quebec which is situated between the Laurentian Highland on the north and the Appalachian Mountains on the south-east, and also that portion of Ontario lying between Lake Ontario and the Laurentian Highland, as well as the peninsula inclosed by *Lakes Ontario, Erie,* and *Huron.* From a short distance below Quebec to the lower end of Lake Ontario the country is almost level. At the western end of Lake Ontario there is a sudden rise in the land, forming the *Niagara escarpment.* The country north and east of the escarpment as far as *Georgian Bay* and the Laurentian Highland is fairly level, though much rolling and hilly land is also found. The country west and south of the escarpment is a broad, level table-land, which slopes gradually down to Lakes Erie and Huron. The whole Lowland district is well watered, but none of the streams and rivers is of great size, with the exception of the *Ottawa River*. The soil is very fertile and easily worked. Some of the finest agricultural land in the world is included in this area. There is a greater variation in temperature between summer and winter than in the Acadian Region, since the Lowlands are farther from the sea.

The Laurentian Highland comprises more than one-half of the whole of Canada. This area includes all the land lying north of the Lowlands of the St. Lawrence, up to and surrounding *Hudson Bay.* To the east of Hudson Bay it constitutes the whole of the *Labrador Peninsula.* South of Hudson Bay it extends through Ontario as far as *Lake Superior* and *Georgian Bay.* A spur stretches across the St. Lawrence River into the United States, forming the *Thousand Islands.*

The Rainy Lake District, Ontario

To the west, its outer edge is marked by the series of lakes from the *Lake of the Woods* to *Great Bear Lake.* The surface of the whole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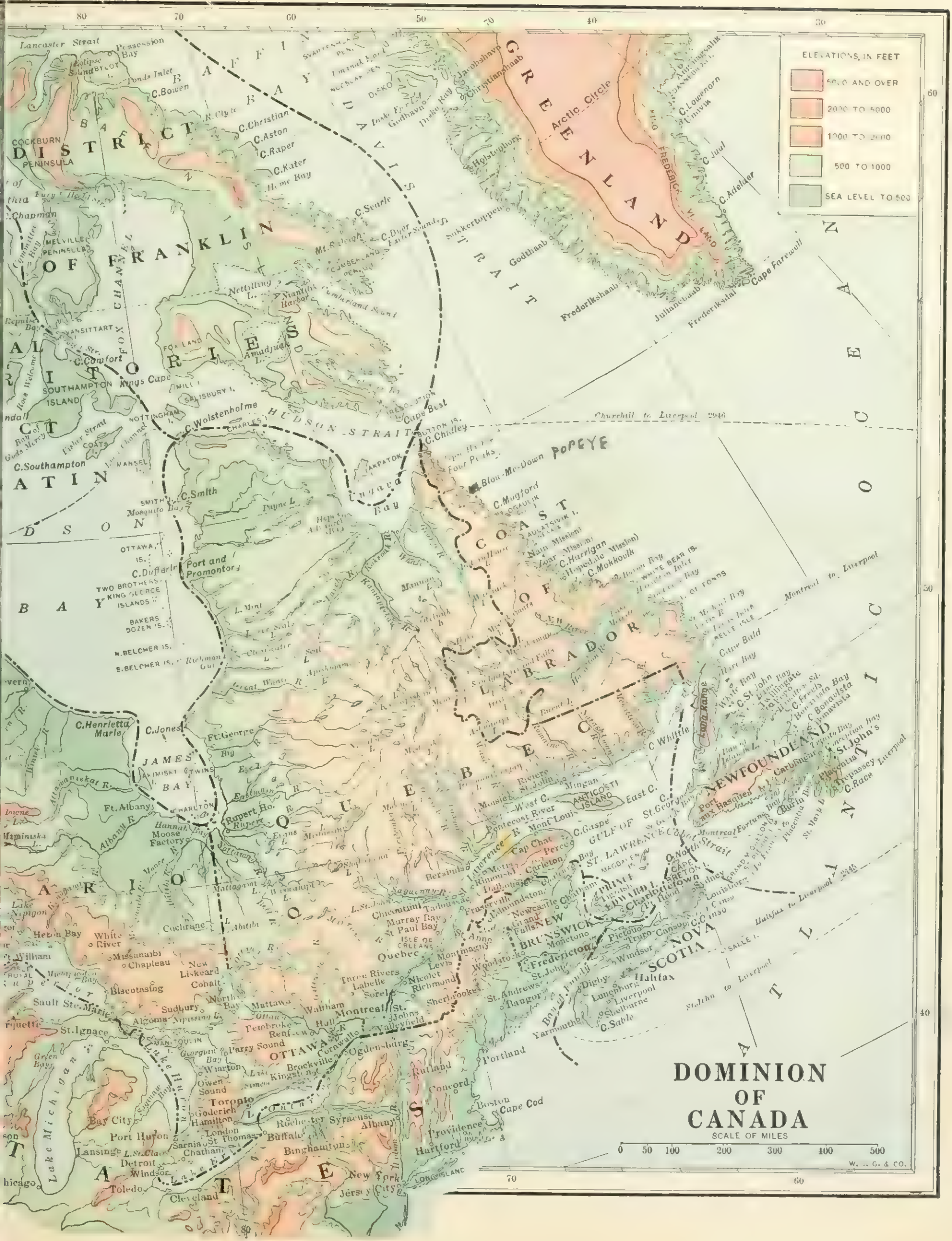
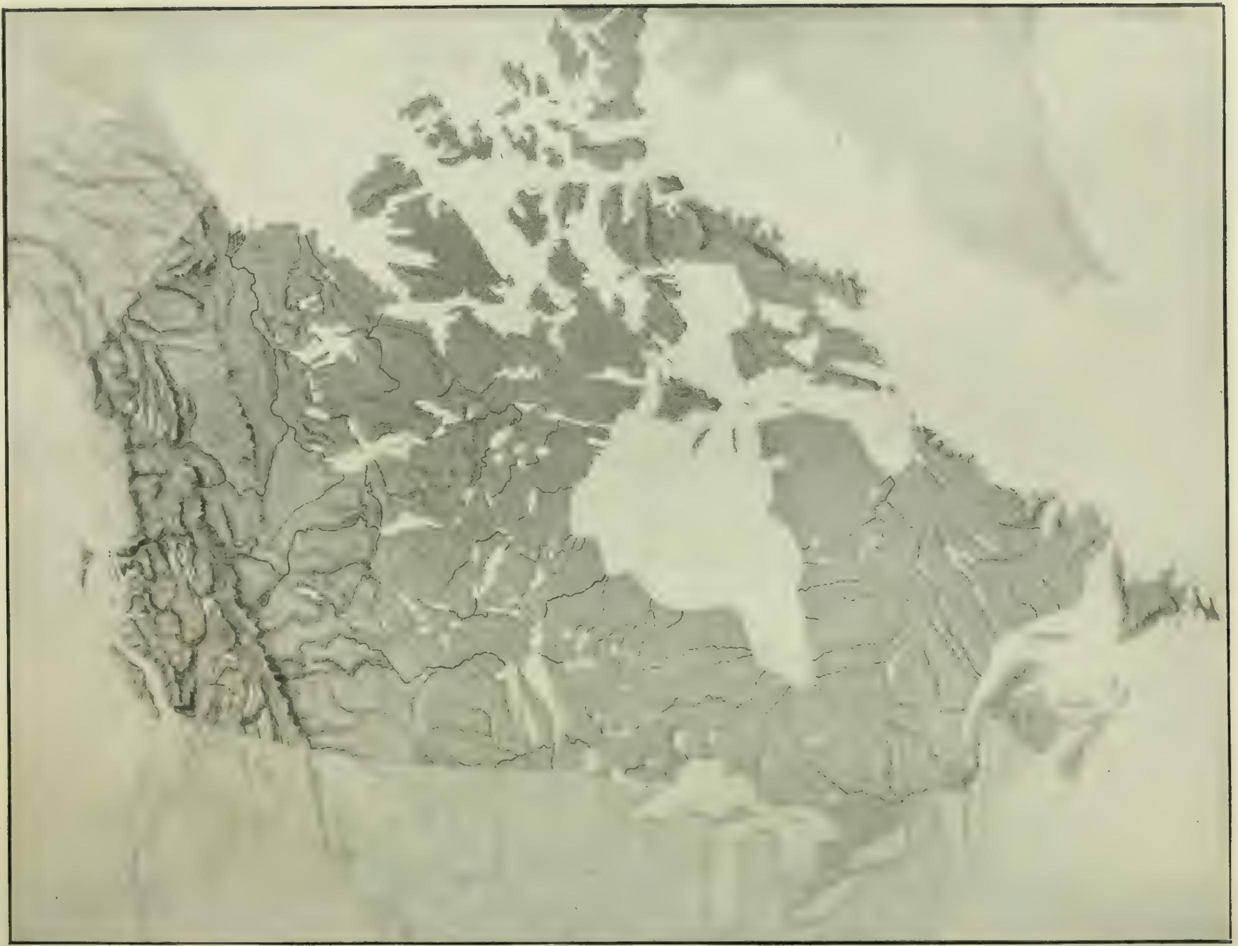
ALASKA
YUKON
PROVISIONAL DISTRICT OF MACKENZIE
NORTHWEST TERRITORIES
PROVISIONAL DISTRICT OF KEEWATIN
BRITISH COLUMBIA
ALBERTA
SASKATCHEWAN
MANITOBA
ONT
UNITED STATES
PACIFIC OCEAN
MELVILLE SOUND
PRINCE ALBERT LAND
VICTORIA ISLAND
WOLLASTON LAND
VICTORIA LAND
KING WILLIAM L.
BOOTHIA PEN.
Arctic Circle
Mt. St. Elias
Mt. Logan
Mt. Wrangell
Dawson
Ft. Selkirk
White Horse
Atlin
Skagway
Juneau
Sitka
Wrangell
Prince Rupert
Port Simpson
Essington
Hazelton
Ft. McPherson
Good Hope
Fort Norman
Fort Wrigley
Fort Simpson
Fort Liard
Ft. Providence
Slave Pt.
Great Slave Lake
Ft. Resolution
Hay River
Ft. Smith
Fort Chipewyan
Lake Athabaska
Fort Fond du Lac
Ft. Vermilion
Ft. St. John
Dunvegan
Peace River Landing
Ft. McKay
McMurray
Lesser Slave L.
Athabaska Landing
Edmonton
Wetaskiwin
Red Deer
Innisfail
Calgary
Banff
Strathmore
Gleichen
Nanton
Macleod
Lethbridge
Medicine Hat
Gull Lake
Maple Creek
Swift Current
Moose Jaw
Regina
Saskatoon
Dundurn
Battleford
Prince Albert
Melfort
The Pas
Flin Flon
Lac la Ronge
Yorkton
Lipton
Moosomin
Wolseley
Milestone
Weyburn
Estevan
Alameda
Brandon
Portage la Prairie
Winnipeg
Selkirk
Carman
Morden
Morris
Cartwright
L. Manitoba
Lake Winnipeg
Nelson House
Port Nelson
York Factory
Churchill
C. Churchill
Du Brochet
Reindeer Lake
Wollaston L.
Cree L.
Beast Mt.
C. Eskimo
Vancouver
New Westminster
Victoria
Nanaimo
Kamloops
Vernon
Revelstoke
Nelson
Rossland
Quesnel
Hanceville
Soda Creek
Alkali Lake
Ashcroft
Clinton
Ft. George
Ft. McLeod
Ft. Grahame
Laketon
Lower Post
Smoky Pk.
Mt. Brown
Mt. Hooker
Seattle
Tacoma
Olympia
Portland
Salem
Spokane
Walla Walla
Sand Point
Shelby Jc.
Great Falls
Helena
Billings
Pacific Jc.
Minot
Grand Forks
Fargo
Bismarck
Pierre
Deadwood
Sioux Falls
Niobrara
Minneapolis
St. Paul
Duluth
Ft. Frances
Boise City
Shoshone
Yellowstone National Park
Salt Lake City
Red Bluff
Sacramento
Oakland
San Francisco
C. Mendocino
C. Blanco
C. Flattery
To San Francisco
Vancouver To Honolulu & Australia
Columbia R.
Missouri R.
Yellowstone R.
Saskatchewan R.
Churchill R.
Nelson R.
Mackenzie R.
Peace R.
Athabaska R.
Liard R.
Longitude West from Greenwich

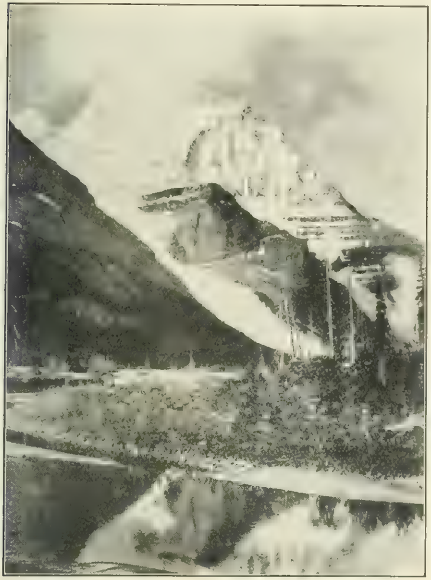


DOMINION OF CANADA



RELIEF MAP OF CANADA

of this vast area is rough and hummocky. The slopes are so gentle, however, that the rivers are very tortuous and winding. Much of the low-lying land is swampy and poorly drained. The whole of the Laurentian Highland is dotted with countless lakes. The soil is generally quite shallow, and in many places the moss-covered rock forms the surface of the land. In the valleys the soil is quite fertile. The only considerable section of the whole highland, however, offering marked possibilities for agriculture is the *Great Clay Belt* of Northern Ontario. It contains millions of acres of deep, rich soil, as yet practically untouched by settlers. The Clay Belt, like most of the southern portion of the Laurentian Highland, is thickly wooded. In the far north, on both sides of Hudson Bay, only grass, moss, lichens and a few stunted shrubs are found. This part of the highland is known as the Northern Plain.

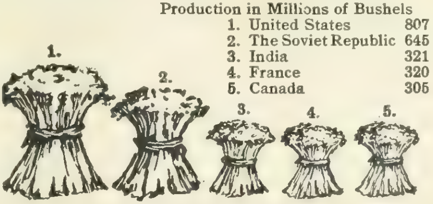


Mount Robson, Robson Park, British Columbia

The Great Central Plain extends from the Laurentian Highland on the east to the *Rocky Mountains* on the west, and from the international boundary on the south to the Arctic Ocean on the north. The plain varies from a width of 800 miles in the south to 400 miles in the north. The eastern portion is uniformly level. In western Manitoba the plain rises into a second level, or steppe, which is rolling country diversified by many low hills and ridges. This level forms the central section of the plain. A third steppe of still greater altitude forms its western part. Its surface is still more broken than that of the second steppe.

The slope of this great plain is to the east and to the north. A low elevation of the land crosses the plain from east to west in about latitude 54°N., dividing the central plain into two large basins. The southern basin is drained by the *Red, Assiniboine*, and *Saskatchewan Rivers* into *Lake Winnipeg*, which in turn is drained by the *Nelson River* into Hudson Bay. The northern basin is drained by the *Churchill* into Hudson Bay, and by the *Peace, Athabaska*, and *Mackenzie Rivers* into the Arctic Ocean.

The soil of the prairie region is, in general, good. Much of it consists of rich black or chocolate loam from one to ten feet deep. The southern portion of the central plain is, therefore, one of the finest agricultural districts in the world. The climate is more severe than that of eastern Canada, and the rainfall considerably less. It is worth noting, however, that the rains come chiefly in June and July, when they are most needed by the crops.



The leading Wheat Countries, based on the Production of 1929

The Great Mountain Region extends from the international boundary on the south to the Arctic Ocean on the north, and from the foot-hills of the Rockies on the east to the Pacific Ocean on the west. The Rocky Mountains in the east, with an average width of sixty miles, and the *Coast Range* in the west, with an average width of 100 miles, are the two main mountain systems.

Douglas Firs, British Columbia

Between the Rockies and the Coast Range are several other ranges, often called collectively the *Selkirks*. Between the Selkirks and the Coast Range lies the *Interior Plateau*, extending for 500 miles northward from the international boundary. West of the Coast Range is another range, which has been partially submerged. *Vancouver Island*, the *Queen Charlotte Islands*, and the thousands of smaller isles which fringe the coast are the projecting peaks of this western under-sea range.

Between the ranges lie many valleys, drained by rapid mountain rivers. One of the largest of these valleys extends along the western base of the Rockies for 700 miles and is drained by the *Columbia* and *Fraser Rivers* and their tributaries. The *Skeena* and *Stikine* drain the northern part of British Columbia into the Pacific Ocean. The north-eastern section is drained by the head-waters of the *Peace*, *Liard*, and other tributaries of the *Mackenzie*. In the extreme north the mountain area is drained by the *Yukon* into Bering Sea. On all these rivers navigation is much obstructed by rapids, but all have navigable stretches, which are of considerable value.

The whole of the mountain area is densely forested, with the exception of the rugged mountain peaks which rise above the tree-line. The western slopes of the mountains are watered copiously with rain brought by the westerlies. The eastern slopes are naturally drier, and the growth upon them is not so luxuriant.

The soil of the valleys and along the flood-plains at the mouths of the rivers is very fertile, and some of the arable land among the mountains is unsurpassed anywhere in the Dominion.

The climate varies both with latitude and with distance from the coast. Along the coast the climate is moist and balmy. The winters are very mild, while the summers are cool. In the interior the winter is colder, with rather extreme heat in summer. The northern part is very cold.

Orchards, Southern British Columbia

Wild Animals.—The forests of Canada are the home of wild animals of many kinds. The moose is common in every part of the northern forest; the woodland caribou is found from New Brunswick to British Columbia; the Virginia deer is hunted in the

Jack Miner's Wild Geese

The home of Jack Miner, Canadian naturalist, near Kingsville, Ont. Canada Geese, usually called "Wild Geese," seek shelter in the little artificial lake. These geese nest on the east coast of Hudson Bay and as far north as Baffin Land. They winter on the Atlantic coast between Florida and New Jersey.

more southern forests of New Brunswick, Quebec, and Ontario. Among the carnivora, the cougar is still to be seen occasionally in Quebec and in the Rocky Mountain Highland. The wild-cat, the Canada lynx, the wolf, and the fox are found throughout the wooded regions. The wolverine, rare in Quebec and Ontario, is still common in British Columbia. Among the smaller flesh-eaters, the fisher, the marten, the weasel, the ermine, the mink, the skunk, and the otter are found everywhere in Canada as far north as the forests extend. The black bear is the common bear of Canada; the grizzly bear, the most formidable animal of North America, is found only in the Rocky Mountains. Two of the most important fur-bearing animals, the beaver and the musk-rat, are common to all parts of the forests of the country.

A Black Bear

The chief animals peculiar to the prairies are the gopher, a burrowing animal which is a great pest to the farmers, the prairie fox, and the coyote. The bison, or buffalo, once so plentiful, is now extinct as a wild animal, but thousands of them are now thriving in the National Parks of Western Canada.

The Northern Plain has also some distinctive animals. Immense herds of caribou live on the coarse grass and moss of the tundra. The musk-ox ranges over the Plain and the islands of the Arctic Archipelago. There, too, are found the white wolf, the Arctic fox, the blue fox, and the polar hare. The polar bear is another native of the coasts and islands of the Arctic Ocean.

Canada is noted for the immense number and variety of her game birds. The wild ducks and geese breed in the summer time in the far north, and, on their way south in the autumn, they crowd the innumerable lakes of the country. Partridge and prairie chickens, the latter almost entirely confined to the Prairie Provinces, are abundant. Snipe, plover, and many other small game birds are found in great numbers.

A Beaver Dam with Beavers at Work

Rivers and Lakes.—Canada is a land of rivers and lakes to an extent unequalled by any other country in the world. Far more than half of all the fresh water in the world is found within or on her borders. About one-twentieth of the entire surface of Canada is water. The waterways of Canada were the paths followed by the early explorers and fur-traders into the unknown heart of the continent; to-day they are great avenues for transportation. Steamers ply on the mountain lakes of British Columbia; hundreds of them traverse the Great Lakes and the St. Lawrence River; and even in the far north boats ply upon the Mackenzie and the Yukon.

The chief river of Canada is the *St. Lawrence*, which drains the Great Lakes to the Atlantic. It is the main waterway for Canada's eastern commerce. While the name St. Lawrence is applied only to the river which issues from the lower end of Lake Ontario, we may consider the whole system of the Great Lakes and the St. Lawrence as one great river system, known by different names in various parts of its course. The total length of navigable waterway afforded by this vast system of lakes and rivers, from the Strait of Belle Isle to Port Arthur, is 2,264 miles—almost as great a distance as that from Halifax to Liverpool.

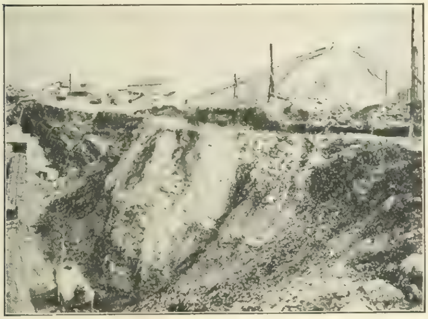
There are many falls and rapids in the rivers of Canada. These, although hindrances to navigation, have a more than compensating value. The power exerted by swiftly moving masses of water is very great. For centuries men have utilized water-power to turn the wheels of their mills and factories. Recently men have learned how water-power can be transformed into electrical energy, transmitted through wires for great distances, and used to drive machines in factories hundreds of miles away.

The Quebec Bridge on the Line of the Canadian National Railways

The water-powers of Canada are unrivalled. It is estimated that they total over 20,000,000 horse-power. At present not much more than one-quarter of this amount is being developed and used. Yet that is enough to provide power for many factories, to light whole cities, and to drive the cars of many street and suburban railways. The water-powers of Canada are one of her greatest assets, and assure for her an immense industrial development.

Resources, Industries, and Trade.—Agriculture is the chief industry of Canada. Grain and vegetable growing, stock-raising, fruit-farming, and dairying are common to all parts of Southern Canada. In 1929 the total value of the field crops of the whole country was almost one billion dollars. In other words, if the value of the farm crops had been divided equally among the people of Canada, every man, woman, and child in the whole Dominion would have received about $100. Still millions of acres of good land are as yet untouched by the plough. No other country possesses finer prospects for agricultural development.

The forests of Canada are another great source of wealth. Originally all Canada was covered with dense forest, with the exception of the prairies and the barren lands of the north. In the southern part of the country, much of the forest has been cleared away by settlers. Much, too, has been destroyed by fire, but enough remains to make Canada one of the most important of lumber-producing countries.



An Asbestos Mine, East Broughton, Quebec

Hidden in the rocks beneath the soil of Canada are stores of minerals whose value no man can even estimate. Comparatively little of Canada has been thoroughly prospected, yet the production of her mines is almost as great in value as that of her forests. All the leading commercial metals, except tin, are found within her borders. Coal is mined in Alberta, Nova Scotia, and British Columbia. Ontario possesses nine-tenths of the known nickel supply of the world. Quebec leads the world in the production of asbestos. Copper, silver, and gold are found in British Columbia and in Ontario. Copper and gold are now being mined in Manitoba. Lead is produced in British Columbia. Natural gas and oil are found in Alberta, New Brunswick, and Ontario.

A Herring-trap Boat, New Brunswick
Small fishing villages dot the shores of the Maritime Provinces.

Not a year passes without valuable finds of minerals being made. Only a few years ago the great silver mines of *Cobalt* and the equally rich gold mines of *Porcupine* were unknown. Just recently oil has been proved to exist in the Mackenzie basin. It is not too much to expect further discoveries in the vast unexplored regions of Northern Canada, which will place the Dominion in the first rank of the mining countries of the world.

Canada has another great source of wealth in the fish which teem in the oceans bordering her coasts and in her inland waters. On the east coast, cod, mackerel, haddock, herring, sardines, smelts, and halibut, as well as lobsters and oysters, are taken in great quantities. Salmon and halibut are the most valuable fish caught on the western coast. Lake trout, sturgeon, whitefish, pickerel, perch, and bass are the chief food fishes found in the inland waters. The waters of Hudson Bay are as yet untouched. As Canada develops, this great inland sea may prove another valuable fishing-ground. Thousands of men are employed in the fishing industry. To ensure an abundant supply of fish, the Dominion Government maintains about fifty fish-hatcheries.

As the natural resources of the country are being gradually developed, the manufacture of the raw materials is steadily increasing. The list of manufactured articles is very large and varied, including most articles of every day use, from thread to threshing-machines, from pins to pianos.

A Woollen Factory, Paris, Ontario

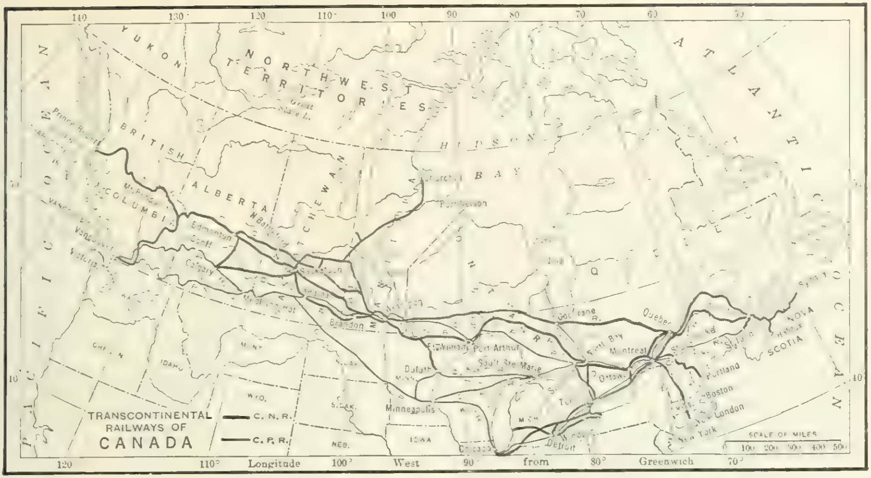
Since Canada has so great and varied a supply of raw materials as well as such splendid manufacturing facilities, its trade reaches large proportions. The principal exports are agricultural products, particularly wheat, oats, vegetables, fruit, meat, hides, bacon, butter, cheese, and eggs; products of the fisheries, such as fresh fish, canned salmon, lobsters, and sardines; mineral products, principally gold, silver, nickel, copper, asbestos, and mica; forest products, such as dressed lumber, shingles, laths, wood-pulp, and paper; and furs, both raw and dressed. The principal manufactures exported are goods made from the natural resources of the Dominion; for example, flour, agricultural implements, and leather goods. The principal imports are goods which a northern country such as Canada cannot produce; for example, tea, coffee, raw sugar, rice, spices, tropical fruits, raw silk and cotton, and rubber. Anthracite coal and certain articles manufactured from steel and iron are also important imports.

Transportation.—There are two great railway systems in Canada—the *Canadian National Railways* and the *Canadian Pacific Railway*. The total mileage of the railways in Canada is 41,024.

The Canadian National Railways are owned by Canada and are operated by a president and a board of directors appointed by the Dominion Government. They extend in many lines from Saint John, Halifax, Sydney, and Charlottetown on the Atlantic coast to Vancouver and Prince Rupert on the shores of the Pacific. One or other of the lines serves every important city in Canada. The main southern line, between Montreal and Chicago, Illinois, passes through the most densely settled and fertile parts of Ontario. The branch lines form a perfect network of railways, especially in the southern part of our own province. The total length of the Canadian National Railways in Canada is 21,880 miles.

The Canadian Pacific, which is owned and operated by a private company, spans the continent from Saint John, New Brunswick, to Vancouver, British Columbia. Its main line, 3,387 miles long, affords an unbroken route from ocean to ocean. The many branch lines which tap cities and towns and farming districts bring up the total length of the Canadian Pacific lines to 16,055 miles.

From the Atlantic to the Pacific are frequent points of connection with the United States. In addition to the two great Canadian systems, there are a number of local railways, built, for the most part, to open up and develop new districts. Thus, for instance, the *Timiskaming and Northern Ontario Railway* is of immense value in tap-



Map showing the Transcontinental Railways of Canada

ping the Great Clay Belt of Ontario for settlement. The *Northern Alberta Railways* serve a similar purpose.

Of the 1,700 miles of electric railways now in operation in Canada, a large percentage is suburban, serving to bring the rural districts into closer touch with the urban centres. The development of the water-power of the provinces has had much to do with the advance of electric railways.

In recent years the great increase in motor transportation has given a strong impetus to the building of good roads. Every province of Canada has recognized the pressing need of providing highways suitable for motor traffic. Ontario, in particular, has expended great sums in this most useful work.

The waterways of Canada and their great utility have already been discussed. The canals of the St. Lawrence water route—the Soo and Welland canals and those of the main river — are of immense advantage to both inland and foreign trade. The facilities for ocean shipping are unsurpassed. Canada is blessed with good harbours on both the east and west coasts. Halifax and Saint John on the Atlantic, Quebec and Montreal on the River St. Lawrence, and Victoria, Vancouver, and Prince Rupert on the Pacific are unsurpassed as havens for ships. They all have railway connections with the interior of Canada, and so the products of Canada's farms, forests, mines, and mills can be readily shipped to any port in the world. Both the Canadian Pacific and the Canadian National Railways have large fleets of merchant vessels, which carry the products of Canada to most parts of the globe. Many British and foreign vessels also make her harbours ports of call.

A Lift Lock on the Trent Canal, Ontario

THE PROVINCE OF ONTARIO

Position, Extent, and People.—The Province of *Ontario*, lying between Quebec on the east and Manitoba on the west, is, in respect to size, the second province in the Dominion. It is over 1,000 miles in its greatest length, nearly 900 miles in its greatest width, and comprises a territory of more than 407,000 square miles—an area three and a half times as great as that of the British Isles.

The eastern boundary of the province is more than 1,000 miles from the open Atlantic. The western boundary lies to the west of the centre of the continent. Naturally we think of Ontario as an inland province. Yet it has a larger coast-line than many a maritime country. Along *Hudson Bay* and *James Bay* the province touches salt water for a distance of 600 miles, while on the south the shore-line along the Great Lakes and their connecting rivers measures at least 1,600 miles. Ontario has also a right of way five miles in width through Manitoba, from the provincial boundary to Port Nelson.

Three-quarters of the people of Ontario are of Canadian birth, largely of British ancestry. In certain sections of the province there is a considerable number of French-Canadians. Most of the inhabitants not born in Canada have come from the British Isles. There is a sprinkling of other nationalities as well, every country in Europe being represented to a greater or a less degree. There are several large reservations for Indians within the province, with a population exceeding 27,000.

The Legislative Buildings, Toronto

Surface and Soil.—The whole of Ontario is a broad, rolling plain, without any prominent elevations marking its surface. From a belt of high ground, which crosses the province from east to west to the north of Lakes Huron and Superior, the ground slopes imperceptibly to the Great Lakes on the south, and to James Bay and Hudson Bay on the north. Yet the province consists of two very different regions—*Old* or *Southern Ontario*, comprising the lowlands along the shores of the St. Lawrence, and Lakes Ontario and Erie, and *Northern Ontario*, to the north of Lakes Superior and Huron.

Old Ontario, the wedge-shaped portion of the province which lies south of Lake Nipissing between Lakes Huron, Erie, and Ontario and the Ottawa River, is one of the most beautiful and prosperous districts in the British Empire. The rolling land of fertile clay or sandy loam is, in the main, admirably adapted for farming, and tilled farms are found everywhere.

The only surface feature of note in Old Ontario is the *Niagara escarpment*, which traverses the province from Queenston Heights to the western corner of Georgian Bay close to Owen Sound. The escarpment faces toward the north and east and is well marked throughout its length. It divides Southern Ontario into two plains. The lower eastern plain lies between the escarpment and the Ottawa River, the higher western plain slopes gently down to the shores of Lake Erie and Huron from the top of the escarpment. The western plain is so productive that it deserves its name—"The Garden of Ontario."

Northern Ontario is entirely within the Laurentian Highland, and exhibits the general characteristics of that highland. It is, for the greater part, a vast region of forests, mineral lands, lakes, and rivers. The timber supply, despite great annual cuts and heavy losses from fires, is still very large, while the amount of pulp-wood available is enormous. The mines of Northern Ontario are even now producing in immense quantities, although the mineral lands of the north are as yet largely unexplored or undeveloped. In addition to these resources, Northern Ontario possesses one of the finest areas of virgin land in the world. This is the *Great Clay Belt* to the south of James Bay. The Clay Belt is a region of 16,000,000 acres of fine farming land, which, when cleared of its heavy growth of pine, spruce, and poplar and brought under the plough, will easily support a population as large as the present population of the whole province.

Venetia Islands, Muskoka Lakes, Ontario

Since the whole of Ontario is a plain with no mountains and few hills of great size, the *divides* which determine the courses of the rivers are low. The most important of these runs along the north shore of Lake Superior at no great distance from the lake, then traverses the province to a point about forty miles north of *Lake Temagami*. The Great Clay Belt lies upon the northern watershed, which slopes gradually toward James Bay and Hudson Bay.

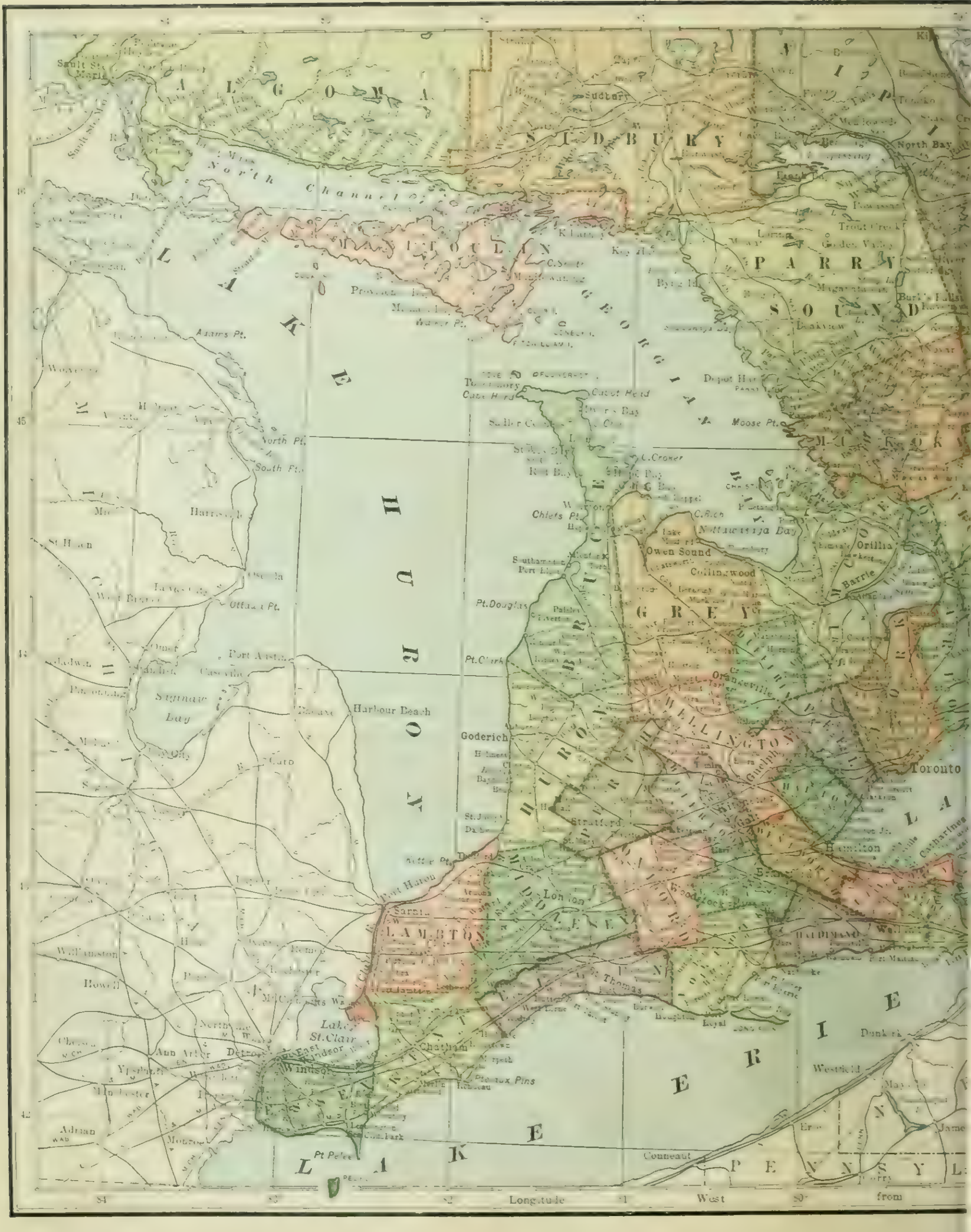
The St. Lawrence and the Great Lakes.—The *St. Lawrence River* and the *Great Lakes* form one of the longest as well as most important waterways in the world, measuring 1,900 miles in length. In its course it expands into five great lakes, four of which form part of the boundary of Ontario—*Lakes Superior*, *Huron*, *Erie*, and *Ontario*. These lakes, together with Lake Michigan, contain as much fresh water as all the other lakes of the world combined.

The St. Lawrence River really has its source in the head-waters of the *St. Louis River*. Its first and greatest expansion, Lake Superior, is 383 miles long, with an average breadth of eighty-four miles. This deep inland sea is subject to violent storms, which lash its waters into a fury rivalling that of the stormy North Atlantic. The shores are bold and precipitous, with cliffs of rock rising from 300 to 1,500 feet above the water. Numerous islands fringe the coast, and in their lee vessels find shelter from storms.

Lake Superior receives its main water supply from *Lake Nipigon*, 1,450 square miles in area, through the *Nipigon River*. There are, however, other tributaries. The *Kaministikwia* is one of the most important of these. The city of Fort William is built at its mouth.

Lake Superior empties its waters into Lake Huron through the *St. Mary River*, sixty-three miles in length. The river is navigable throughout its entire course, except at one point, where there is a fall of twenty-two feet in less than a mile. To overcome this difficulty, canals have been constructed on both the Canadian and the United States sides of the river. The tonnage

A Lock in the Sault Ste. Marie Canal, Ontario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A L G O M A
S U D B U R Y
Sudbury
N I P I S S I N G
North Bay
North Channel
MANITOULIN
P A R R Y S O U N D
L A K E H U R O N
G E O R G I A N B A Y
Adams Pt.
Cabot Head
Moose Pt.
North Pt.
South Pt.
C. Croker
Chiefs Pt.
C. Rich
Nottawasaga Bay
Owen Sound
Collingwood
Orillia
Barrie
Pt. Douglas
G R E Y
B R U C E
Pt. Clark
Port Austin
Saginaw Bay
Harbour Beach
Goderich
Orangeville
WELLINGTON
Guelph
H U R O N
P E R T H
Stratford
Toronto
Hamilton
Galt
Port Huron
Sarnia
LAMBTON
London
MIDDLESEX
Woodstock
St. Thomas
Lake St. Clair
Detroit
Windsor
Chatham
Pte. aux Pins
Ann Arbor
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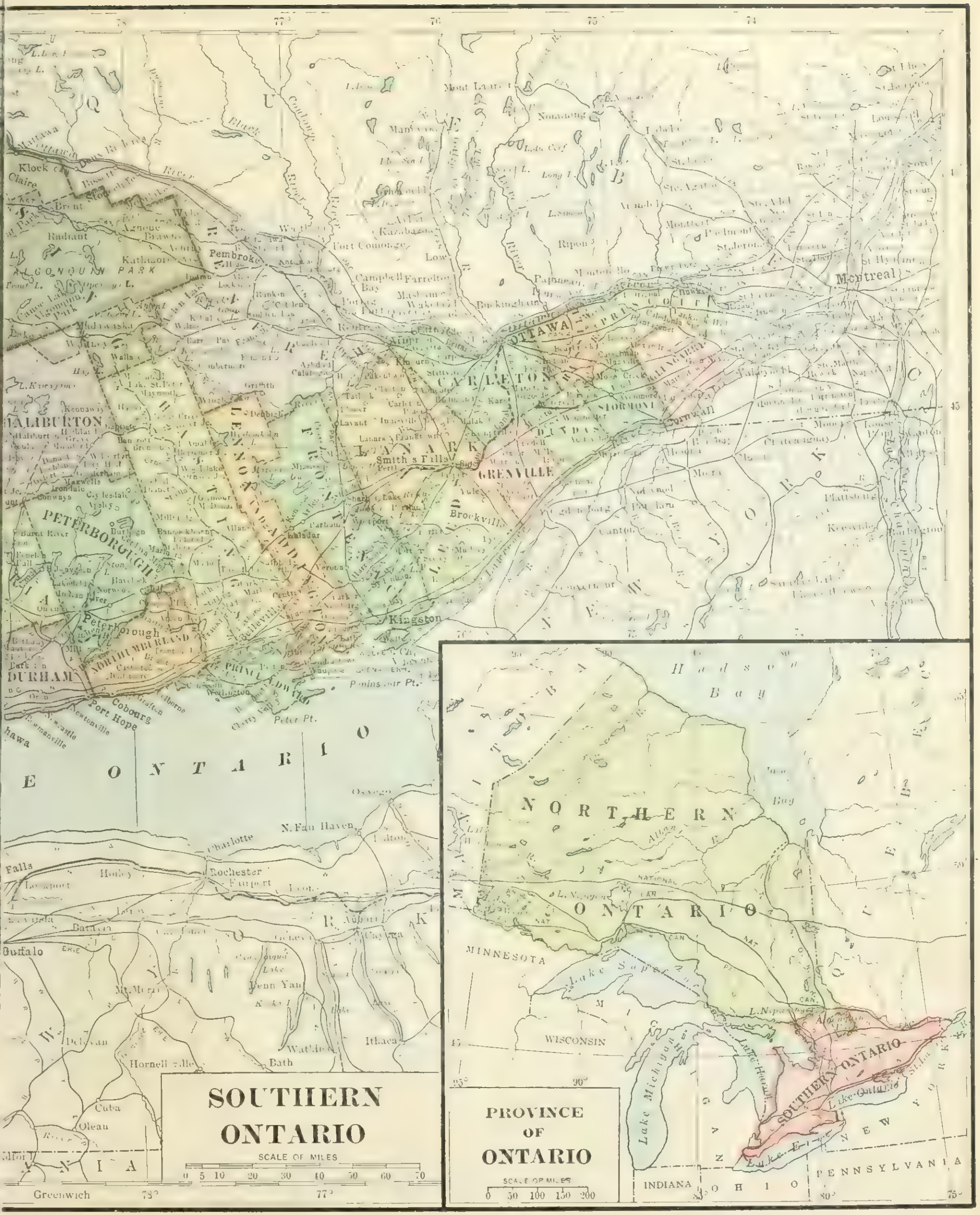


SOUTHERN ONTARIO

SCALE OF MILES

0 5 10 20 30 40 50 60 70

PROVINCE OF ONTARIO

SCALE OF MILES

0 50 100 150 200

passing through the *Soo Canals* during the seven to eight months of open navigation is three times as great as that through the Suez Canal in the whole year.

Lake Huron is 247 miles in length, with an average breadth of ninety-two miles. *Georgian Bay* is separated from the lake proper by *Bruce Peninsula* and *Manitoulin Island.* Between Manitoulin Island and the mainland is the *North Channel,* a picturesque sheet of water, bordered by high rocky cliffs along the north shore. In Georgian Bay the beauty of the scenery is enhanced by a great number of islands—variously estimated at 30,000 to 47,500—with which it is bordered. Several important rivers flow into the North Channel and Georgian Bay. The *Spanish River* passes through an important timber area. The *French,* draining *Lake Nipissing,* the *Severn,* providing an outlet for the waters of *Lake Simcoe,* and the *Magnetawan* are the chief feeders of the Bay upon the east.

Tobacco Harvest, Southern Ontario

At its southern extremity Lake Huron narrows and discharges its waters into *Lake St. Clair* through the *St. Clair River,* thirty miles in length and navigable throughout. This lake, which is about twenty-five miles long and of almost equal width, is very shallow and muddy. Through it a channel sixteen feet deep and 300 feet wide is kept open by dredging. The *Detroit River,* thirty-two miles long, connects Lake St. Clair with Lake Erie.

Lake Erie, the shallowest of the Great Lakes, is 241 miles long, with an average width of forty-one miles. Owing to the shallow water, even a slight gale quickly raises a heavy sea, so that the lake is often very rough.

The *Niagara River* carries the waters of Lake Erie to Lake Ontario. In its course it offers one of the grandest sights in the world, where the waters of the river plunge over the edge of the Niagara escarpment in a sheer drop of 158 feet. Below the Falls the river runs very rapidly between steep cliffs. At one place it is compressed to a width of 300 feet between cliffs of rock 200 feet high. There the waters swirl in a seething whirlpool, with a wild beauty rivalling that of the Falls themselves. At *Queenston,* seven miles from the mouth of the river, the waters again become tranquil. Steamers from Lake Ontario ascend the river to this point. As navigation between Lakes Erie

A Section of the Welland Ship Canal, Ontario

The Welland Ship Canal, from Port Colborne, on Lake Erie, to Port Weller, on Lake Ontario, is twenty-five miles from lake to lake. It has seven lift-locks and one guard-lock. The lift-locks are 820 feet in length and seventy-nine feet in width and can accommodate vessels drawing up to thirty feet. The guard-lock, near the Port Colborne entrance, is 1,380 feet in length and is the largest lock in the world.

and Ontario is prevented by the Falls, the Dominion Government has constructed the Welland Ship Canal to overcome the difficulty.

Lake Ontario, the smallest of the Great Lakes, is 180 miles long, with an average breadth of forty-two miles. Its shores are quite low, the highest elevation being 350 feet at *Scarboro' Heights*, not far from Toronto. The principal inlets are *Burlington Bay*, at the western extremity of the Lake, *Toronto Bay*, and the *Bay of Quinte* at the north-eastern end.

The shores of Lake Ontario narrow as *Kingston* is approached, and a little below that city the St. Lawrence River proper begins. Between *Gananoque* and *Brockville* the river passes through the labyrinth of *The Thousand Islands*, which by their picturesque beauty attract many visitors every summer. Below *Prescott* the river narrows, the stream quickens, and the water rushes fiercely down the *Long Sault.* Then it widens out into *Lake St. Francis.* Down the *Cedars* and the *Cascade Rapids*, through *Lake St. Louis* and past the mouth of the *Ottawa*, the river flows, to enter upon its headlong rush through the treacherous *Lachine Rapids* just above *Montreal.* All the rapids in its course are overcome by canals, built and maintained by the Dominion Government, so that vessels can pass from Fort William on Lake Superior to Montreal, and thence to the Atlantic Ocean itself.

A Ploughing Match, Southern Ontario
The ploughing matches are keenly contested and create great interest.

Climate.—Southern Ontario, owing to its latitude and the influence of the Great Lakes, has a comparatively mild climate. The great expanses of water which almost surround it moderate the temperature at all seasons. Consequently, neither the summers nor the winters are so extreme as in many districts farther to the south, but beyond the influence of the lakes. Farther north, upon the high land which forms the divide between the Great Lakes Basin and that of Hudson Bay, the climate is much more severe, and summer frosts are not unknown. Still farther north, however, the moderating influence of Hudson Bay is felt, so that in the Great Clay Belt the winters are milder than in the district farther south around Lake Superior. On the whole, the summers of Ontario are delightful. There are few days when the heat is very oppressive, and the nights are usually cool. The winters are dry and exhilarating, with many days of unclouded, sunny skies and clear, bracing air. As in Quebec, the heavy snowfall in Northern Ontario and the frozen rivers and lakes are a great help to the lumberman. The rainfall,

A typical Orchard, Southern Ontario

averaging thirty to forty inches annually, is abundant at all seasons, but especially so in the spring and early summer when the growing crops need it most.

Agriculture.—Ontario is essentially an agricultural province. The fertile soil and admirable climate permit the cultivation of a great variety of crops, and farming has been the chief occupation of the people ever since the first settlers began to clear the dense forest which covered the rolling plains of Southern Ontario. Much of the province is unsuited to agriculture, but there are still millions of acres of virgin land of the finest quality which await settlement.

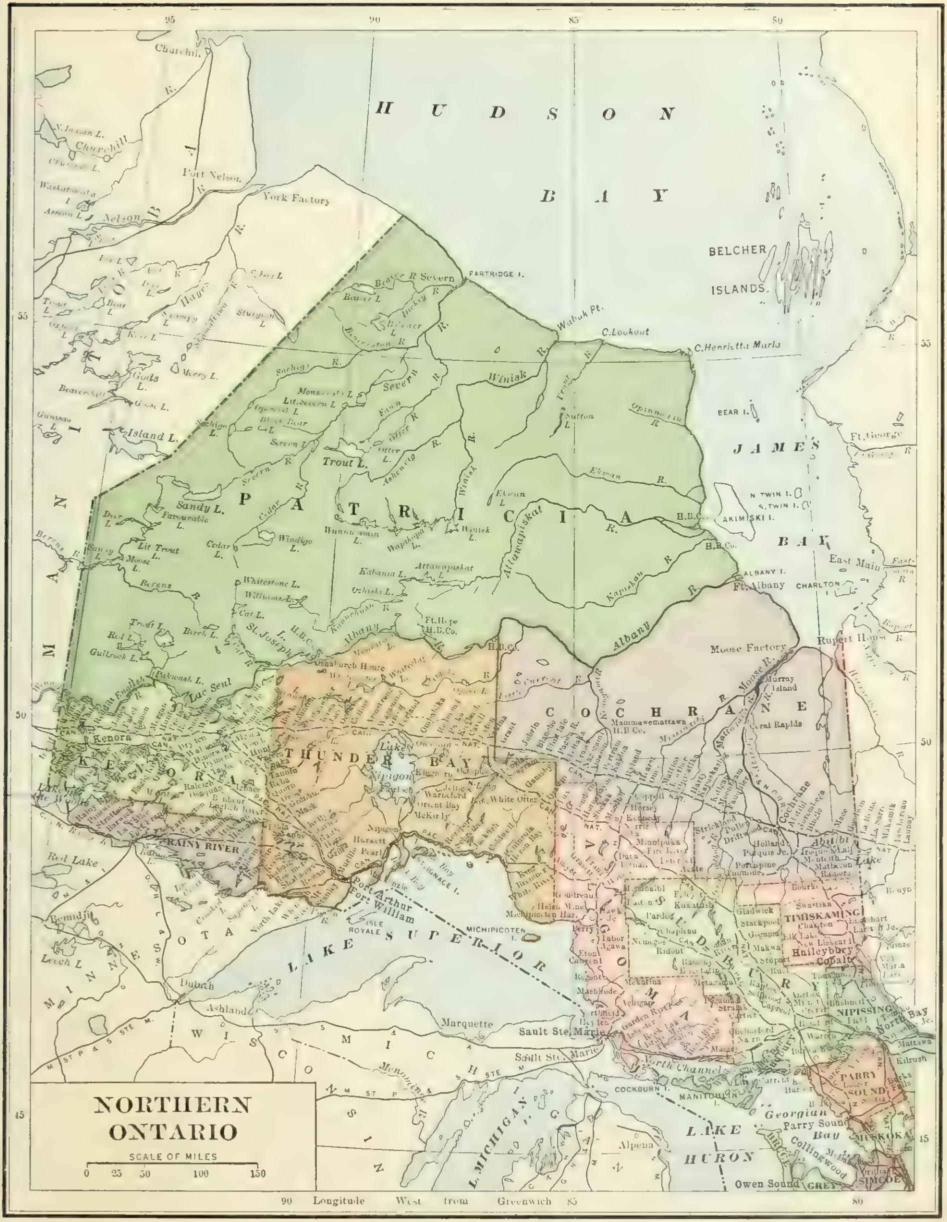
Packing Apples, Southern Ontario

Oats, wheat, barley, corn, hay, and potatoes are the staple crops. The growing of grain and vegetables, however, is not by any means the sole occupation of the Ontario farmer. Stock-raising and dairying are the backbone of the industry, and the fodder crops and much of the grain crop are fed to the stock. Ontario raises excellent horses, cattle, sheep, and swine. Within the province is produced more than half of the cheese and about one-third of the butter made in the whole of Canada. Much of the cheese is exported.

Fruit-growing is now an important branch of agriculture in the province. Apples are grown almost everywhere in Southern Ontario, the crop in the western section being specially abundant. The great fruit-growing section, however, is practically confined to the counties bordering Lake Erie and the western end of Lake Ontario. There apples, peaches, pears, plums, cherries, grapes, currants, raspberries, and strawberries are cultivated with splendid results. Vegetables are also grown in great quantities in this district. Large canning factories, which handle both fruit and vegetables, are found in many centres. These prevent waste and enable the grower to find a ready market for his surplus products. Tobacco culture is a growing industry along the Lake Erie shore in the counties of Essex and Kent.

Mining. — Ontario stands easily first among the provinces in respect to the value of mineral productions. Almost all the minerals of economic importance, with the single exception of coal, are found in Ontario. The silver mines of *Cobalt* have proved to be exceptionally rich. Other districts, such as *Gowganda*, also contain promising deposits of silver, and the development of new fields gives assurance that Northern Ontario will stand high among the silver-producing countries of the world for a long time to come. The gold mines at *Porcupine* include one of the largest in the world. Gold ores are being found in other widely separated districts in the northern section of the province, such as the *Red Lake* district. Northern Ontario is now one of the great gold-mining districts of the world.

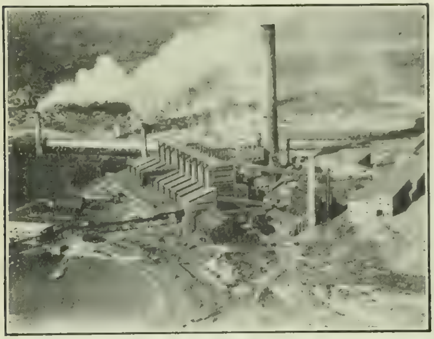
Ontario ranks first among all the nickel-producing countries. In fact, the nickel



NORTHERN ONTARIO

mines at *Sudbury* control the world's markets for this metal. Copper is found in the same district.

In the country north of Lake Superior and in the *Rainy River* district there are extensive deposits of iron ore. It is probable that the *Belcher Islands* in James Bay will prove to be rich in iron. The chief works for smelting iron ore are at *Sault Ste. Marie*, *Hamilton*, and *Port Colborne*.



A Nickel Mine, Sudbury, Ontario

This is only one of the many nickel mines at or near Sudbury.

Among the mineral products other than metals may be mentioned petroleum, produced in Lambton county; natural gas, which is especially abundant along the Lake Erie shore; salt, of which there are large deposits in south-western Ontario; and stone and clay products, of which the value is increasing yearly.

Lumbering.—The forest lands of Ontario comprise 102,000 square miles—an area more than equal to that of Great Britain. They contain great forests of red and white pine, which are valuable timber trees, as well as very large areas of spruce, balsam, fir, hemlock, jack-pine, and poplar, suitable for pulpwood. Besides these there are many other varieties of valuable trees; oak, beech, maple, elm, basswood, and cedar are fairly abundant, especially in the wood lots which still dot the farms of Old Ontario.

The most important lumbering districts are on the Upper Ottawa, to the west of Lake Superior, and to the north of Georgian Bay. The rivers of these areas are of great advantage to the lumbermen in floating the logs to the saw-mills, which are located at various points. One of the largest newsprint mills in the world is in operation at *Iroquois Falls*, and many other pulp and paper mills, such as those at *Kapuskasing, Sault Ste. Marie, Dryden, Fort William, Port Arthur. Fort Frances*, and *Espanola*, are scattered along the southern border of Northern Ontario.

Much timber has been destroyed in the past by forest fires and careless methods of lumbering. Fire rangers, however, now patrol the forests during the summer and autumn. Many splendid areas, totalling about 23,850 square miles, have been set apart by the Government as forest reserves.

Fisheries.—The freshwater fisheries of the province, which include the Great Lakes, *Lake Nipissing, Lake Nipigon*, and *Lake of the Woods*, are very valuable. Whitefish, trout, pickerel, and lake herring are the principal varieties sought by fishermen, but the catch includes pike, sturgeon, eels, perch, catfish, carp, and other coarse fish.

Log Booms in the Ottawa River, Ontario

The Ottawa is a famous lumbering stream. Notice the Dominion Parliament Buildings in the background.

Transportation.—Southern Ontario has a perfect net-work of railways, and Northern Ontario is being rapidly opened up by new lines. A line of the Canadian National Railways traverses Southern Ontario from end to end, and there are numerous branches running in many directions. The main

A Pulp and Paper Mill, Iroquois Falls, Ontario

line of the Canadian Pacific passes up the *Ottawa Valley* to *Mattawa*, and thence westward across the whole province. From *Sudbury* a branch line runs to *Sault Ste. Marie*. Another line passes through *Toronto* from *Montreal* to *Windsor*. A direct line also runs from Toronto to Sudbury, giving connection with Winnipeg and the Western Provinces. From these trunk lines radiate many branch lines. The Canadian National Railways traverse Ontario on their way from Montreal to Winnipeg. There is direct communication by these lines between Toronto and Winnipeg and Toronto and Ottawa, in addition to various other branch lines. Another National line, on its way from the Maritime Provinces to Winnipeg, passes through the province upon the northern slope of the Hudson Bay divide, and helps to open up the clay belt for settlement. A branch connects the main line with *Port Arthur*. The Timiskaming and Northern Ontario Railway, owned and operated by the Provincial Government, runs from *North Bay* to *Moose Factory* on James Bay. Several United States railways, such as the Michigan Central and the Pere Marquette, also enter the province from the south.

The main waterway of the province is formed by the Great Lakes, with their connecting rivers. During the summer months many lines of steamers, both freight and passenger, are in operation. Many steamers are engaged in carrying grain from Fort William and Port Arthur down to various Lake ports or to Montreal. Ore steamers and boats carrying general freight help to swell the numbers of the Great Lakes fleet. Regular passenger liners run from *Sarnia*, *Owen Sound*, and *Port McNicoll* to Fort William and Port Arthur. Magnificent steamers handle the tourist traffic between Hamilton, Toronto, Kingston, and Montreal and the Lower St. Lawrence.

In addition to the canals of the St. Lawrence and Great Lakes route, there are two important canals in Ontario. The *Rideau Canal* connects Ottawa with Kingston by a much shorter route than that down the Ottawa River and up the St. Lawrence to Lake Ontario. The *Trent Valley Canal*, from Trenton through the *Kawartha Lakes* to Georgian Bay, provides a short cut through the heart of the province from Lake Ontario to Georgian Bay. Besides these long canals, the *Murray Canal*, only a trifle over five miles long, separates the peninsula of Prince Edward County from the mainland, greatly shortening the distance into the Bay of Quinte for vessels coming from the west.

A Freighter on the Great Lakes

Manufactures.—Ontario is fortunate in not being dependent upon coal alone to turn the wheels of her factories. Close to the great industrial section of the province is *Niagara Falls,* where electric power is generated. All over the province are many falls and rivers which are being used for a similar purpose. Blessed with an abundance of raw materials from field, forest, and mine, with unsurpassed transportation facilities, and with this cheap and widely distributed power, Ontario is well equipped for manufacturing. There are about 10,000 factories in operation. Almost every village has its manufacturing plant of some size and importance. Nearly every class of goods on the Canadian market is manufactured within the province. The chief are iron and steel products, electrical apparatus, agricultural implements, automobiles, food products—flour, oatmeal, canned goods, and meat products—textiles and clothing, leather goods, shoes, pulp and paper, brick, cement, and glass and wood products of all kinds.

Power Station, Queenston, Ontario

The Queenston-Chippawa Power Development, a project of the Hydro-Electric Power Commission of Ontario, is a wonderful piece of engineering. The Commission has other large developments at Niagara, and on the Nipigon River, at Eugenia Falls on the Bear River, on the Trent River, and on other smaller rivers.

A Hydro Transmission Line, Ontario

Summer Resorts.—Ontario offers not only profitable work of many kinds to its inhabitants, but also unequalled facilities for rest and sport. The delightful climate, the numerous lakes and rivers with their splendid fishing, and the beautiful scenery of many parts of the province make them ideal spots in which to spend vacations. The *Georgian Bay* and *Muskoka* districts, *Lake Temagami,* the *Kawartha Lakes,* the *Thousand Islands,* and *Lake of the Woods* are favoured resorts, not only for the people of Ontario, but also for thousands of tourists from the United States. The smaller towns on the shores of Lakes Ontario, Erie, and Huron also attract summer visitors. Niagara Falls ranks high among the famous beauty-spots of the world.

Opinicon Lake, Rideau Lake District, Ontario

In addition to the privately owned summer resorts of Ontario, there is the *Algonquin National Park,* set aside by the Provincial Government for the free use of the public. This great tract of 2,000 square miles presents all the native beauty of a Canadian northland forest, unmarred by the hand of man. Its enchanting lakes and streams teem with bass and trout, the forests are alive with moose, deer, and beaver, while thousands of wild fowl and other birds nest within its confines. No one is permitted to shoot within the limits of the Park, and only enough fish to supply needed food may be caught.

Other Ontario reservations are the *Rondeau Provincial Park* and the *Quetico Provincial Park*. There are also several parks which are set aside by the Dominion Government — *Point Pelee, Thousand Islands,* and *Georgian Bay Islands National Parks.*

A View of Yonge Street, Toronto, Ontario

Cities and Towns.—*Toronto,* situated on a spacious harbour of Lake Ontario, is the capital of the province. It is the largest city of Ontario and the second in size in the Dominion. The city is noted for its splendid residential sections of well-built homes, spacious lawns, and fine old trees. There are many public parks which add greatly to the beauty of the city. In Queen's Park stand the Legislative Buildings, close to the grounds and splendid buildings of the University of Toronto and its affiliated colleges. The business of the city is large and varied, as its situation and unsurpassed transportation facilities make it a great distributing centre. Toronto is the headquarters of the eastern section of the National Railways. Its industries include foundries, clothing and white-wear industries, meat-packing establishments, implement factories, railway shops, and many others equally important. The city is the centre of the radio industry of the British Empire.

Hamilton is the second city of the province. It is beautifully situated on a magnificent land-locked harbour at the western extremity of Lake Ontario. Behind the city rises the Niagara escarpment, which there closely approaches the lake. Surrounding the city is one of the finest fruit districts in North America. Hamilton is essentially a manufacturing city. There are several huge industrial plants and a host of smaller ones. The chief manufactures include iron and steel products of all kinds, agricultural implements, machinery, electrical apparatus, cotton fabrics, boots and shoes, clothing, building material, such as brick, lumber, and roofing, and furniture. The city is the seat of McMaster University.

A Street in Hamilton, Ontario

Ottawa, the third city of the province and the capital of the Dominion of Canada, has a population only slightly less than that of Hamilton. It is picturesquely situated on a cluster of hills overlooking the *Ottawa River.* The Dominion Parliament Buildings and Government offices give an air of dignity to the city, and millions of dollars have been spent in improving its parks, driveways, and general appearance. Ottawa University is located there. The chief industry of the city is the lumber trade. The *Chaudière Falls* on the Ottawa River, between Ottawa and *Hull,* provide electricity to run the street railways and to light the streets of both cities, as well as to drive the machinery of the factories that cluster along the banks of the river.

Industries at Ottawa, Ontario

On the left is Ottawa, in Ontario, and on the right Hull, in Quebec. The Chaudière Falls supply power to both cities.

London, on the *Thames River,* is situated midway between Toronto and Detroit. Its situation in a fine agricultural district and its good railway facilities make it an important distributing centre. It is a city of many and varied industries. Many people are employed in making stoves and furnaces, boilers, boots and shoes, hosiery, ready-to-wear garments, biscuits, and confectionery. The University of Western Ontario is situated there.

Windsor, on the *Detroit River,* is a thriving city with many flourishing industries, including those connected with the manufacture of tobacco, salt, automobiles and automobile accessories, and wire fencing. The city is connected with Detroit by a railway tunnel and also by a passenger tunnel a mile in length from portal to portal. The city of *East Windsor* owes its importance chiefly to the automobile industry. The separate municipalities of *Sandwich, Walkerville,* and *Ojibway* form a continuous city with Windsor and East Windsor, and the whole group is known locally as the *Border Cities.*

Brantford, on the *Grand River,* is the centre of a prosperous agricultural country. Its manufactures, mainly agricultural implements, machinery, stoves, carriages, and woollens, add to its commercial importance. The Provincial Institution for the Blind is situated in this city.

Kingston, situated near the eastern end of Lake Ontario, is the seat of Queen's University and the Royal Military College. The industries of the city include the manufacture of locomotives and leather goods. A short distance away is one of the Dominion Government penitentiaries.

The Ambassador Bridge

This bridge across the Detroit River connects the Border Cities with Detroit. It is, with its approaches, one and three-quarter miles in length. The centre span is 152 feet above the river.

Peterborough is situated on the *Otonabee River,* which provides electrical power for many factories. Its manufactures include electrical appliances, woollens, cereal foods, and packed meat.

Buildings of the Agricultural College, Guelph

St. Catharines and *Niagara Falls* are distributing centres for the productive agricultural district of the *Niagara Peninsula.* Both have several large industries which increase their importance. Fruit-canning, wine manufacture, paper-making, and the manufacture of edge-tools give employment to many people in St. Catharines. Niagara Falls, besides being a famous tourist resort, is also the centre for the power plants which are harnessing the Niagara River for the benefit of the province. At *Welland*, on the Welland Canal, is a large ferro-alloy plant with eight electric furnaces.

Kitchener, Galt, Guelph, Woodstock, and *Stratford* are busy cities in the heart of the Lake Peninsula; all produce a large output of manufactured goods of many kinds. At Guelph is located the Ontario Agricultural College and Experimental Farm. The district around Woodstock is noted for its dairy products, and a great quantity of butter and cheese is shipped from this city. In Stratford are large railway shops, belonging to the Canadian National Railways.

St. Thomas and *Chatham* serve as distributing and marketing centres for the counties bordering upon the western part of the Lake Erie shore. The Michigan Central Railway maintains large construction and repair shops in St. Thomas. Chatham is situated at the head of navigation on the *Thames River,* and enjoys the advantages of being a lake port. Both cities have large manufacturing plants which contribute to their prosperity.

Belleville, on the *Bay of Quinte, Sarnia,* on the *St. Clair River,* and *Owen Sound,* on *Georgian Bay,* are lake ports of importance. At Belleville is located the Provincial School for the Deaf. At Sarnia is the St. Clair tunnel, which connects the railway systems of Ontario and Michigan. Owen Sound has one of the finest harbours on the Upper Lakes. These three cities are manufacturing and distributing centres, as is also *Oshawa,* on Lake Ontario. This last city is a noted centre for the manufacture of automobiles. In fact, Oshawa takes third place among the manufacturing cities of Ontario.

An Automobile Factory, Oshawa, Ontario

Cornwall and *Brockville,* on the St. Lawrence River, and *Smith's Falls,* an important railway junction, are among the larger manufacturing towns of eastern Ontario. *Goderich*, on Lake Huron, and *Collingwood* and *Port McNicoll*, on Georgian Bay, are all busy lake ports. *Barrie* and *Orillia*, on *Lake Simcoe*, and *Lindsay*, on the *Scugog River*, are thriving towns in the centre of Southern Ontario.

In Northern Ontario the twin cities of *Fort William* and *Port Arthur* are of prime importance. They are situated on *Thunder Bay*, at the head of Canadian navigation on Lake Superior. Fort William is the lake terminus of the Canadian Pacific Railway. Both cities are terminal points for lines of the Canadian National Railways. They have immense elevators for handling the grain from the Western Provinces. Both cities are well supplied with electric power and are making rapid progress in manufacturing.

The city of *Sault Ste. Marie*, on the St. Mary River, is a hive of industry. Cheap power is provided by the river. The ore in the neighbourhood furnishes raw material for its large iron and steel plants, while the supply of spruce for its pulp-mills is almost inexhaustible. *North Bay*, on Lake Nipissing, is an important railway junction. It is the gateway to the north country.

Sudbury, *Cobalt*, and *Timmins* are mining towns of Northern Ontario. *Kenora*, far in the west of the province, is a thriving town on the shore of the beautiful Lake of the Woods. *Cochrane*, at the junction of the Timiskaming and Northern Ontario Railway with one of the lines of the Canadian National Railways, is the centre of the fertile Clay Belt. It already numbers some thousands of inhabitants and is supplied with electric light and power.

THE PROVINCE OF QUEBEC

Position, Extent, and People.—The Province of *Quebec* lies along both banks of the St. Lawrence River for almost its entire length. To the south Quebec borders upon New Brunswick, the United States, and Ontario, and stretches northward as far as Hudson Strait. To the east the Coast of Labrador separates it from the Atlantic; to the west are the Province of Ontario and Hudson Bay. From east to west it extends for a distance of over 1,000 miles, from north to south for about 1,200 miles. It is the largest province of Canada, being over 590,000 square miles in extent. It is about five times as large as England, Scotland, and Ireland together.

About four-fifths of the population of Quebec are descendants of the original French settlers and speak French as their native tongue. The remaining fifth, chiefly of British descent, are found principally in the cities and in the Eastern Townships.

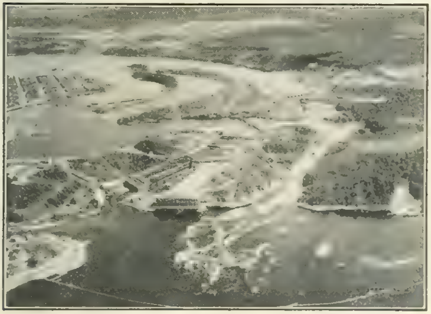
Surface and Soil.—The Province of Quebec falls naturally into three well-marked areas: the *Northern* or *Laurentian area*, comprising by far the greater part of the province, the *Valley of the St. Lawrence*, extending along the river from the city of Montreal to the western extremity of the province, and the *Appalachian* area in the south-eastern corner of the province.

Market Day, Quebec City

The great Laurentian table-land of Quebec extends from *Hudson Strait* and *Ungava Bay* southward and eastward to a varying but never great distance from the *Gulf of St. Lawrence* and the *St. Lawrence River*. The southern edge of the table-land closely follows the north shore of the Gulf, the estuary, and the River St. Lawrence from the *Strait of Belle Isle* tó within twenty miles of the city of *Quebec*. There it turns away from the river, but still follows its general course at a varying distance, until it meets the *Ottawa River* about half-way between the cities of Ottawa and Montreal.

Much of this great table-land is yet unsurveyed. It is a rolling land of rounded hills and gentle valleys, with lakes and streams beyond all counting. The forest covers it from the southern edge to the latitude of Ungava Bay, where the Northern Plain begins. The lakes along the southern border are the sources of numbers of unfailing streams, which, flowing over the edge of the highland in rapids and cascades, provide enormous water-power for the valley to the south.

To the south of the St. Lawrence a spur of the *Appalachian Mountains* enters Quebec east of *Lake Champlain* and extends to the north-east right to the tip of *Gaspé Peninsula*. These are the *Notre Dame Mountains*. South-east of this range is the rolling country of the section known as the *Eastern Townships*, where is found some of the best farming and grazing land in Canada.



Power Developments, Shawinigan Falls

Bounded by the Laurentian Highland on the north and the Notre Dame Mountains on the south, lies the plain of the St. Lawrence Valley. The whole of the plain is splendid agricultural land, with a deep, rich soil of clay and sand. The greater part of it is laid out in well-tilled farms and is dotted with thriving towns and cities.

Rivers.—The mighty St. Lawrence, the chief river of Canada and one of the great rivers of the world, is of incalculable value, not only to Quebec but also to the whole country. Unlike the Orinoco, the Nile, or the Mississippi, it does not lose itself in a vast alluvial delta. Its banks are clear cut to the ocean's edge, and a broad, deep channel extends from its mouth into the heart of the Atlantic. Above Quebec its average width is two miles; below that city it rapidly widens. At the Saguenay, it is twenty miles wide, at *Matane* thirty miles, at *Anticosti Island* one hundred miles. Its length from Anticosti Island to Lake Ontario is 680 miles. The largest ocean steamers ascend the river to Montreal, almost 1,000 miles inland from the Strait of Belle Isle. No other country has its greatest seaport at so great a distance from the open ocean.

A Section of the Harbour, Montreal

The only tributary of any size falling into the St. Lawrence on the south bank is the *Richelieu River*, which drains Lake Champlain into the St. Lawrence. This river was the route taken in the old days by the French soldiers and their Indian allies for their forays against the English colonies to the south. To-day boats on peaceful errands pass through it to Lake Champlain, and thence down the Hudson River to New York, in the United States.

The *Ottawa River*, the chief tributary of the St. Lawrence, drains an area of 80,000 square miles in the provinces of Quebec and Ontario. After flowing for 600 miles, marking throughout a great part of its course the boundary between the two provinces, it empties into the St. Lawrence by four mouths, forming several islands, of which the most important is the *Island of Montreal*. With the help of two small canals, the Ottawa is navigable from Montreal to Ottawa. Here the *Chaudière Falls* form an impassable barrier, although steamers ply on the upper reaches of the river. The waters of the Ottawa, like those of all the rivers flowing from the Laurentian Highland, are dark in colour. The water poured into the St. Lawrence does not mix with the bright waters drawn by that river from the great settling-basins of the Great Lakes, but flows on in a separate current readily distinguishable from that of the main stream, from the mouth of the Ottawa to the sea.

Making Maple Sugar, Quebec

The maple-sugar industry is of great value to the small farmers of Quebec.

The *Saguenay River* is the outlet for the waters of beautiful *Lake St. John*. It is a dark, gloomy stream, flowing between walls of rock approaching close to the river on either side. The scenery is magnificent. The water-power on the river is enormous and is being rapidly developed.

The *St. Maurice River* drains the country lying between the basins of the Ottawa and the Saguenay. The Shawinigan Falls are among the finest in Canada. Electric power derived from them serves Montreal and its vicinity.

The Falls of the *Montmorency River*, six miles distant from the city of Quebec, is another of the beauty-spots of the Dominion. The river leaps over a sheer precipice 250 feet high.

Climate. — The climate of Quebec is extremely varied, as, indeed, must be the case in a province of such great extent. In the valley of the St. Lawrence the summers are hot. Below Quebec the summers are moderated by proximity to the cold waters of the Gulf, and in this area spring is later than it is farther to the south-west. All over the province the winters are cold, with a heavy snowfall. For about five months of the year the St. Lawrence River is ice-bound. During the winter the farmers of the province use the frozen lakes and rivers as highways for the transport of their produce to market. The heavy snowfall aids lumbering greatly.

Agriculture.—Quebec is one of the great agricultural provinces of Canada. Hay, oats, potatoes, turnips, and wheat are the most valuable crops, but corn, barley, buckwheat, beans, peas, and rye are also largely grown. Dairy products are a very important item in the total farm production, and stock-raising is a growing industry. Apples, plums, and melons are the chief fruits grown. Quebec is the banner maple-sugar province of the Dominion. Almost every farm has its maple-sugar bush.

Lumbering.—The timber trade follows agriculture in importance. In the north the predominant trees are pine, spruce, and fir, while farther south are maple, oak, elm, and other hardwoods. Much of the timber cut in the north is made into pulp and subsequently into paper. There are large pulp and paper mills at many points in the province. The greater part of the timber cut is exported to the United States, Great Britain, France, and South America. Only a very small part of the immense forest area of the province has been touched, so that the industries which depend upon the forest are assured of an abundant supply of raw material for many years to come. Large areas, containing in all over 8,200 square miles, have been set aside by the Provincial Government as forest reserves, thus giving further assurance that the lumber supply will not soon be exhausted.

Mining.—The mineral resources of Quebec are as yet little known. The whole extent of the Laurentian Highland may yet prove rich in minerals, and already the little explored district north-east of Lake St. John has given evidence of rich deposits of many kinds. At present the most valuable commercial mineral is asbestos, with which Quebec practically supplies the whole world. Copper, iron, mica, molybdenite, and graphite are also mined. Valuable copper and other ore deposits are now being developed at *Rouyn* in the northern part of the province near the border of Ontario. Cement and phosphate of lime, a valuable fertilizer, are produced in large quantities.

Fishing.—Fishing is an important industry along the shores of the St. Lawrence and in the Gulf. In many cases the *habitants* along the St. Lawrence River combine fishing with farming. The chief fish caught are salmon, cod, herring, and mackerel.

Manufacturing.—Quebec ranks second only to Ontario in the amount and value of its manufactures. The abundance of water-power almost everywhere in the province compensates for the absence of coal. The chief manufactures are sugar, woollen and cotton goods, boots and shoes, pulp and paper, tobacco and cigars, furs and hats, machinery, railway cars, musical instruments, cutlery, rifles, and gunpowder.

Cities and Towns.—*Quebec*, the provincial capital, is perhaps the most interesting of all Canadian cities, and certainly is the most picturesque. Upon the bold and precipitous height of *Cape Diamond*, crowned with the ancient citadel of Quebec, is built the Upper Town, while the Lower Town—the older portion of the city—spreads over the base of the promontory. In the steep and narrow streets of the Lower Town are still to be seen the old stone houses built before General Wolfe, upon the *Plains of Abraham*, ended the dominion of France in the New World. The modern city contains many splendid buildings, among which may be mentioned the Legislative Buildings, the Court House, the City Hall, and the imposing structures of Laval University.

Champlain Street, Quebec City

The harbour of Quebec is large enough to hold a navy and deep enough to float the largest vessels built. The city is the headquarters for the export of timber.

The Montmorency Falls provide electricity for the city's use. The manufactures are varied and important, including leather goods, lumber, boots and shoes, furs, and tobacco.

Across the St. Lawrence from Quebec is *Levis,* which has a large dry-dock. Not far distant on the north bank of the St. Lawrence is the celebrated shrine of *Ste. Anne de Beaupré,* which is yearly visited by thousands of pilgrims.

A Calèche, an old-fashioned Carriage, Quebec

A short distance above the city, the St. Lawrence is spanned by the Quebec Bridge, a monument to the skill of Canadian engineers. The difficulties of building so huge a structure over the broad and deep St. Lawrence were very great. The completion of the bridge in 1918 marked the accomplishment of one of the greatest engineering feats ever attempted.

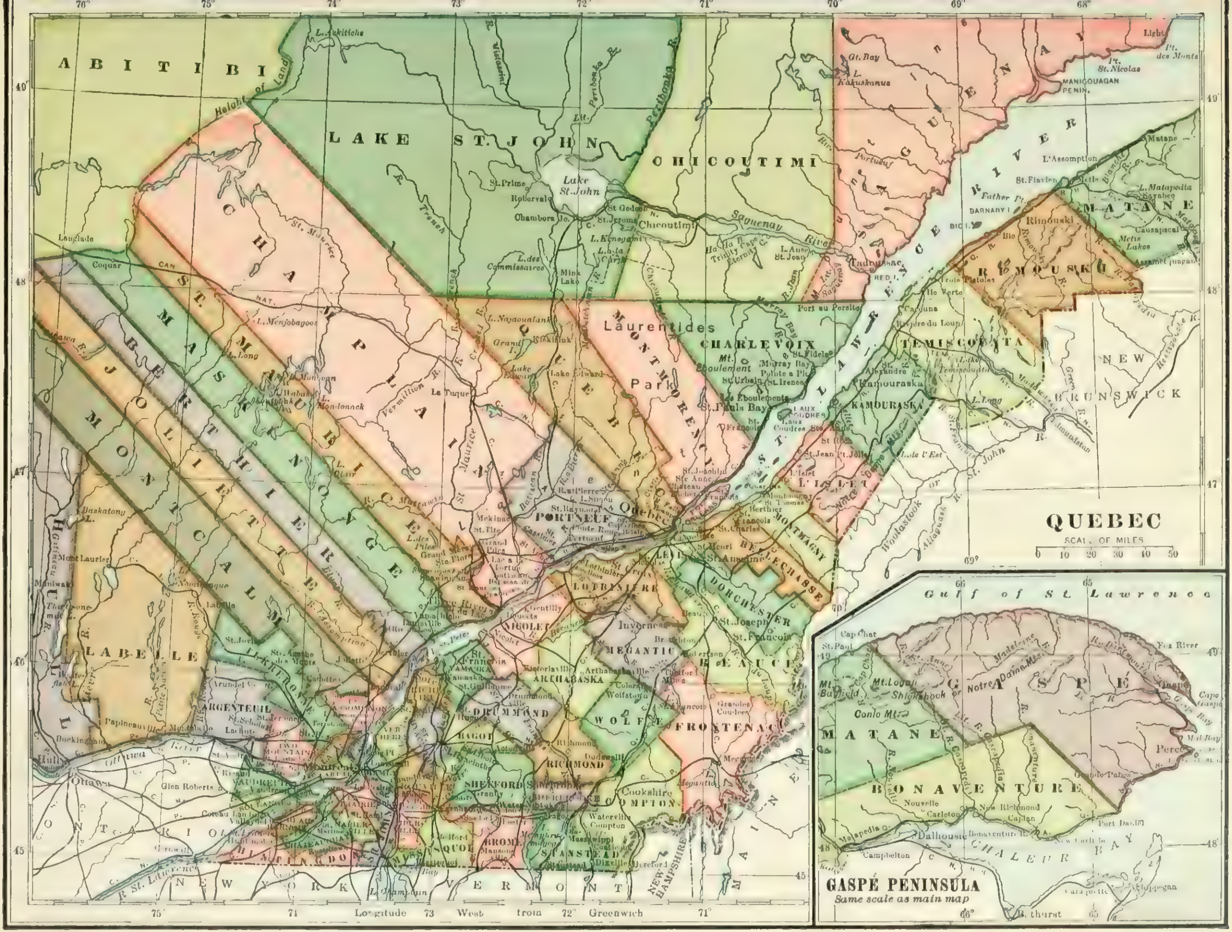
Montreal, the largest city in the Dominion, owes its greatness to its admirable position. It is situated far inland, so that it serves as a distributing centre for a great area of surrounding country. At the same time, it is at the head of summer navigation for the larger ocean vessels, and through it passes the major portion of Canada's overseas imports and exports. Furthermore, it is surrounded by one of the finest agricultural districts in the Dominion, and this contributes materially to the prosperity of the city.

The city is built upon the east side of *Montreal Island,* which lies in the St. Lawrence at its confluence with the Ottawa River. This small island, only thirty-two miles long by eleven miles wide, is one of the most important in the world. Upon it live over 1,200,000 people. The city stretches for miles along the river front, while behind it rises the beautiful *Mount Royal*—a fitting background for a noble city. The buildings are largely of limestone quarried from Mount Royal, and these enhance the appearance of solid prosperity which characterizes the city. The harbour of Montreal is well provided with docks and with facilities for the handling of incoming and outgoing products.

Montreal is not only the commercial centre, but it is also one of the chief manufacturing cities of the Dominion. The principal car shops of the Canadian National and Canadian Pacific Railways are located there.

The city is also the educational centre of the province, being the home of McGill University and the University of Montreal. Its public buildings include many churches, monuments, hospitals, and charitable institutions. At *Ste. Anne de Bellevue,* near the

Interior of a Cotton Mill, Montreal


QUEBEC
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LABELLE
ARGENTEUIL
TERREBONNE
QUEBEC
MONTMORENCI
CHARLEVOIX
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DORCHESTER
BELLECHASSE
MONTMAGNY
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KAMOURASKA
TEMISCOUATA
RIMOUSKI
MATANE
MEGANTIC
ARTHABASKA
DRUMMOND
BAGOT
RICHMOND
WOLFE
FRONTENAC
BEAUCE
SHEFFORD
BROME
MISSISQUOI
STANSTEAD
COMPTON
HUNTINGDON
GASPÉ
BONAVENTURE
Laurentides Park
ST. LAWRENCE RIVER
Gulf of St. Lawrence
CHALEUR BAY
NEW BRUNSWICK
MAINE
NEW HAMPSHIRE
VERMONT
NEW YORK
ONTARIO
Quebec
Montreal
Ottawa
Hull
Chicoutimi
Lake St. John
Roberval
La Tuque
Rimouski
Levis
Three Rivers
Sherbrooke
Longitude 73 West from 72° Greenwich

city, is Macdonald College, one of the best equipped agricultural colleges in Canada. *Westmount,* lying side by side with Montreal, is peculiarly a residential city.

Hull is built upon the north bank of the Ottawa River opposite the city of Ottawa, with which it is connected by three bridges. Its inhabitants are employed mainly in manufacturing wood products, such as lumber, wood-pulp, paper, woodenware, and matches.

Sherbrooke, the chief city of the Eastern Townships, rivals Hull as an industrial centre. Its cotton and woollen mills and its machine-shops are operated by power obtained from the *St. Francis River*. They are among the largest and best in Canada.

Drummondville, the centre of the Quebec silk industry, *Arvida,* with a huge aluminum plant, *Verdun, Three Rivers, Lachine, St. Hyacinthe, Valleyfield, Grand Mère,* and *Shawinigan Falls* are among the towns which contribute to Quebec's manufacturing output. This has been steadily increasing as the natural resources of the province and its magnificent water-powers have been gradually developed. So great are these resources that a splendid industrial future may be confidently predicted for the province which, historically at least, is the core of the Dominion.

THE PROVINCE OF NEW BRUNSWICK

Position, Extent, and People.—The Province of *New Brunswick* lies between the State of Maine on the west and the Gulf of St. Lawrence and *Northumberland Strait* on the east, and between Quebec and *Chaleur Bay* on the north and the *Bay of Fundy* on the south. Within these limits lies a block of land, almost square in shape, measuring about 200 miles either from north to south or from east to west. The total area of New Brunswick is nearly 28,000 square miles, making it the largest of the Maritime Provinces. The *Isthmus of Chignecto* connects the province with Nova Scotia.

The Dry-dock, Saint John, New Brunswick
The dry-dock is 1,556 feet long, 125 feet wide, and 42 feet deep.

The population of New Brunswick is about one-ninth as large as that of Ontario. About a quarter of the inhabitants are of French descent; the remainder, with the exception of about 1,300 Indians in the northern districts, are of purely British ancestry or birth.

Coast-line.—The coast-line along the Bay of Fundy, though rugged, is much lower than the Nova Scotia coast across the bay. There and many excellent harbours, of which the best are those of *Saint John* and *St. Andrews.* The Gulf of St. Lawrence shore is also well supplied with harbours. Chaleur Bay is everywhere navigable and has not a rock, reef, or shoal over its entire extent.

Surface and Soil.—New Brunswick is a province of rolling plains. The only hills of considerable size are found in the wild and broken country about the watershed which separates the rivers flowing into the Gulf of St. Lawrence and the head-waters of the St. John and Restigouche Rivers. The whole surface of the province was originally covered with one vast, unbroken forest, and even yet the greater part so remains.

About one-quarter of the total area of the province consists of bogs, heath, barren rocky tracts, and swamps incapable of cultivation. The remainder consists of good arable land. The alluvial lands of the river valleys and the low-lying marsh lands at the head of the Bay of Fundy are extremely fertile.

Rivers.—New Brunswick is the best-watered country in the world, containing an unusual number of rivers which terminate at their mouths in estuaries, forming good harbours. The rivers, in general, have cut wide valleys, which consist of low, alluvial lands, usually flooded in spring. The valleys are clothed with hardwoods. The land, when cleared, is very rich and easily worked.

The Valley of the St. John River, Evandale

The chief river of the province is the *St. John*—a noble stream draining half the province. It is navigable for large steamers as far as *Fredericton*, eighty-four miles from its mouth, and for smaller steamers as far as *Woodstock*, sixty miles farther up. The country traversed by the St. John is notable for its productiveness and its scenic beauty.

Next in importance to the St. John is the *Miramichi*, which drains the whole central section of the province. Its mouth forms an excellent harbour, upon which are built the thriving towns of *Newcastle* and *Chatham*.

The *Restigouche* forms part of the boundary between New Brunswick and Quebec. In a land where every stream and river teems with fish, the Restigouche takes first place as a trout and salmon stream.

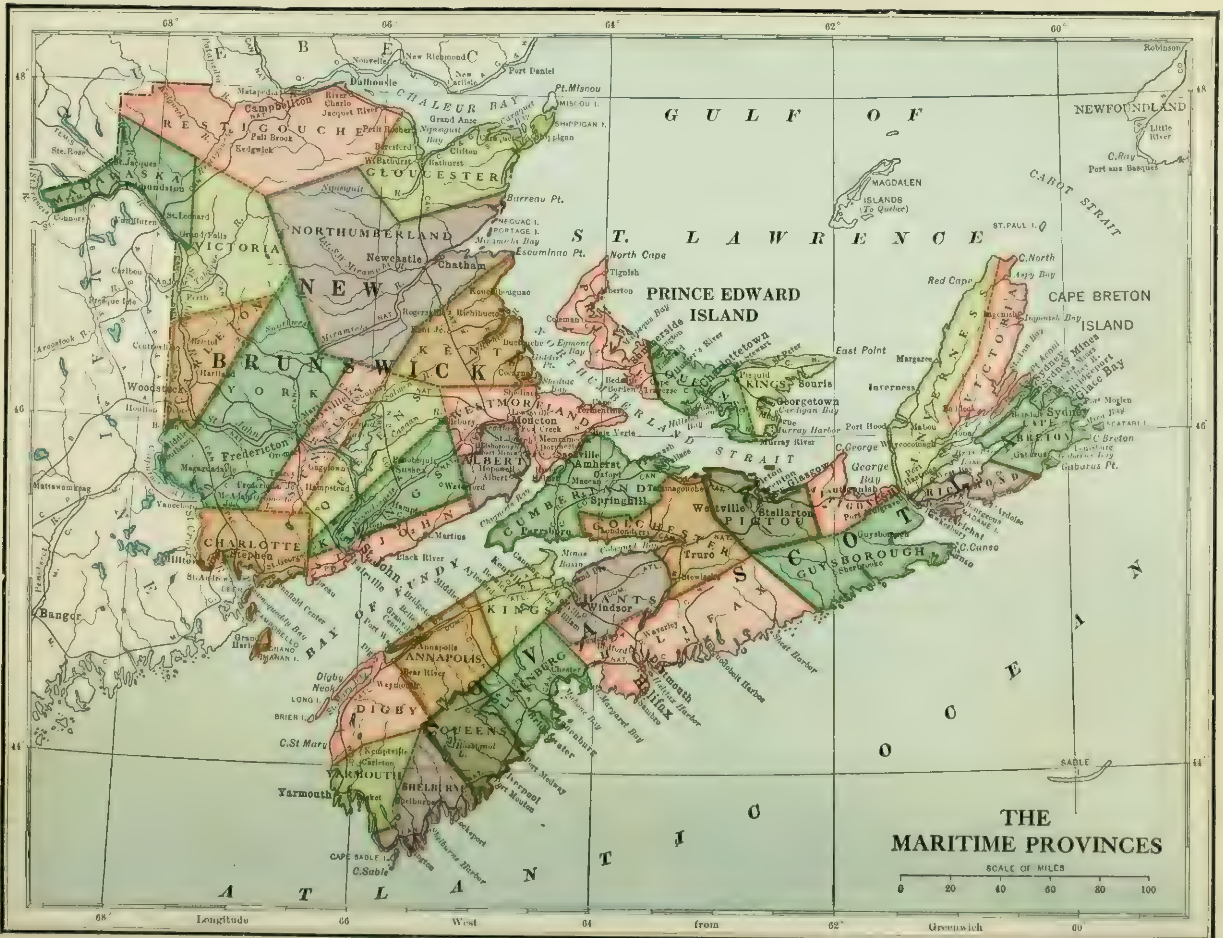
The *Petitcodiac* is famous for its "tidal bore," which, as far up the river as *Moncton*, reaches a height of from four to six feet. *See page* 18 The *St. Croix* forms part of the boundary between New Brunswick and the state of Maine.

Climate.—The climate of New Brunswick is healthful and invigorating. Although the sea is on three sides of the province, the air is not so humid as might be expected, and the heat and cold are not so trying as in moister climates. The snowfall is heavy and greatly facilitates lumbering. The warm, but not necessarily hot, summers favour the rapid growth of vegetation and permit the successful cultivation of all fruits and cereals of the Temperate Zone.

Agriculture.—The principal crops grown are wheat, oats, hay, buckwheat, and root crops. Of these, potatoes, hay and clover, and oats are the staples. New Brunswick potatoes are especially good and find a ready market in the West Indies, the New England States, and the central provinces of Canada. The meadows and pasture lands of the province are an incentive to stock-raising and dairying. Fruit-culture, though as yet in its infancy, is progressing. The St. John Valley is now producing excellent apples, and strawberries, raspberries, and the small fruits generally do well there. Within recent years fox farms have been established, and the rearing of black foxes and other fur-bearing animals for their pelts is proving profitable.

A Fox Farm, New Brunswick

Fishing.—The coast-line of New Brunswick, 600 miles long and well provided with harbours, offers splendid facilities for the development of sea-fisheries. The principal



THE MARITIME PROVINCES

fish caught are cod, herring, haddock, salmon, and shad. It is worth noting that the province has the only sardine canneries in Canada.

Mining.—New Brunswick is known to be rich in minerals, but the dense forest growth over much of its area has hindered prospecting and mining. Only three mining industries are as yet upon a commercial basis—coal-mining, gypsum-quarrying, and stone-quarrying. Coal is found in many districts and lies quite close to the surface. Gypsum is mined in considerable quantities. There are large stone quarries on the Miramichi, producing such excellent stone that it has been used for the erection of many of the public buildings at Ottawa, and elsewhere beyond the borders of the province.

Lumbering.—The forest lands of New Brunswick produce timber of many kinds, principally spruce, fir, pine, birch, cedar, maple, beech, and hemlock. The manufacture of these woods into sawn lumber, laths, shingles, pulp-wood, poles, and railway ties requires a large number of mills. Much of the output is exported to Great Britain and the United States. The rivers of the province play an important part in the lumber industry.

Manufacturing.—In addition to the sawmills and pulp-mills of the province, which employ thousands of men and are the outstanding manufacturing establishments, there are many other industrial plants of various kinds. Among the most important of these are the sugar refineries at Saint John; cotton-mills at Saint John, Moncton, and *Marysville*; boot and shoe factories at Fredericton; stove foundries at *Sackville*; fish and lobster canneries at Chatham; and many wood-working and furniture factories in the various towns of the province.

The province possesses excellent water-powers, which await only development to give an additional impetus to the growth of manufacturing. The *Grand Falls*, on the St. John River about 225 miles from its mouth, are the most valuable source of electric power in the province.

Cities and Towns.—*Fredericton*, the capital of the province, is built upon the St. John River, eighty-four miles from its mouth. It is the seat of the government, the commercial centre of the interior, and an important lumber and manufacturing place. In the city are the Legislative Buildings and the University of New Brunswick. Fredericton has excellent railway facilities, lines branching out from it to every part of the province.

The harbour of *Saint John* is deep, sheltered, and free from ice at all seasons. The city possesses wharf and elevator facilities and has a large number of factories. It has rail connection with every part of the North American continent, and steamship communication with almost every port of the world. The magnificent dry-dock is the largest in the world. Just north of the city are the famous "Reversing Falls" of the St. John River.

Marysville, New Brunswick

The cotton factory referred to below is seen in the background of the illustration.

Moncton, the second city of the province in size, is situated on the Petitcodiac River. This city is the Atlantic headquarters of the Canadian National Railways. It has large textile mills and many other important industries. *Chatham*, on the Miramichi River, is a centre of the lumber and fishing industries. *Dalhousie*, at the head of Chaleur Bay, has a good harbour and is a shipping port for the lumber floated down the Restigouche. It is also a well-known summer resort. *St. Stephen*, on the St. Croix River, has large lumbering interests, and *Milltown*, adjoining it, is noted for its coloured cottons. *Marysville* has one of the largest cotton-mills in Canada.

THE PROVINCE OF NOVA SCOTIA

Position, Extent, and People.—The Province of *Nova Scotia* consists of two distinct sections—the peninsula of Nova Scotia proper and the island of *Cape Breton.* The peninsula is about 270 miles long and varies from sixty to one hundred miles in width; the island is a little over a hundred miles long and of very irregular breadth. The total area of the province is well over 21,000 square miles. It is the smallest of all the provinces except Prince Edward Island.

Cape Blomidon, on the Bay of Fundy, Nova Scotia

The great number of the inhabitants of Nova Scotia are of Canadian birth and of British ancestry. There are also in the province many descendants of the original French settlers. About 2,000 Micmac Indians still remain, but few of them are pure-blooded Indians. The total population is over half a million.

Coast-line.—Except for the *Isthmus of Chignecto*, only twelve miles wide at its narrowest point, the province is surrounded on all sides by salt water. To the north and west are the Gulf of St. Lawrence and the Bay of Fundy; to the south and east is the Atlantic Ocean.

The Atlantic coast is low and rocky, and studded with many rocky islets. It is very irregular, and there are many good harbours, some of which are capable of sheltering the largest ocean vessels. The coast of the Bay of Fundy is bordered by a cliff several hundred feet high, which is almost unbroken save for a few long inlets, such as *Annapolis Basin* and *Minas Basin.* The northern coast is low and has several harbours. The best of these is that of *Pictou.*

Lying to the south-east of Nova Scotia, about 110 miles distant, is Sable Island, a sand-bar very dangerous to navigation. The Dominion Government maintains life-saving stations there.

Surface and Soil.—Nova Scotia is divided into two nearly equal parts by a range of hills, running through the entire length of the peninsula. The part sloping toward the Atlantic, is, in general, rocky and barren, dotted with many lakes and intersected by numerous streams. The whole area is forested and is a sportsman's paradise. Moose, caribou, and bears are to be found, while foxes, otters, and minks are fairly common. Partridges, snipe, and woodcocks are plentiful, and wild geese and ducks frequent the lakes and the bays. The only agricultural land is found along the river valleys.

The northern slope toward the Bay of Fundy and the Gulf of St. Lawrence is quite different. There are ranges of hills, covered with beech, maple, and other hardwoods, running parallel to the coast-line. Both hills and valleys are covered with deep, rich soil, and, when cleared, make fine farms. There are broad flats around the head of the Bay of Fundy, which, when diked, produce enormous crops of hay. These meadows require no fertilizing to maintain their productive power.

Marsh Hay, Nova Scotia

The marsh lands of Nova Scotia are extraordinarily fertile.

The deep *Strait of Canso* separates the peninsula from Cape Breton Island. The surface of the southern part of the island is low and level, but the northern part is rugged and mountainous. A canal leads from the open sea into the beautiful *Bras d'Or Lakes* and the interior of the island.

The Car Ferry across the Strait of Canso on the Line of the Canadian National Railways

Rivers.—Owing to the narrowness of the peninsula, the rivers of Nova Scotia are small. They are, however, very numerous and provide the province with water-power. Many are tidal rivers, in which the influence of the tide is visible right to their head-waters. When the tide is out, nothing remains of these rivers but an expanse of smooth, red mud.

Weighing Lobsters at a Factory, Nova Scotia

Climate.—The climate of the province is healthful and invigorating, despite the fogs which are prevalent at certain seasons along the Atlantic coast. The rainfall is abundant, averaging about forty-four inches a year.

Fishing.—We have already read about the fishermen and fisheries of Nova Scotia. The principal fish caught are cod, haddock, herring, and mackerel. Lobsters are trapped along the coast. Most of the codfish are dried. The haddock and other fish reach the inland cities of Canada either fresh or smoked.

Agriculture.—The climate and soil of Nova Scotia are suited to the cultivation of fruits and cereals. The apple is the king of fruits in the province. The famous *Annapolis Valley*, nearly 100 miles long, lies between a range of hills bordering the southeastern shore of the Bay of Fundy and the central ridge of the province. Here the early French immigrants planted apple orchards and laid the foundation of a great industry, which now yields annually about two million barrels of choice apples. Great Britain takes the larger part of the crop. Peaches, plums, pears, and cherries are also grown.

An Apple Orchard in Bloom, Nova Scotia

Oats take the leading place among the cereals, closely followed by wheat, barley, and buckwheat. Potatoes and root crops generally do well. The abundance of hay from the tidal meadows encourages stock-breeding and dairying.

Mining.—Nova Scotia contains much mineral wealth. Coal-fields are worked in Cumberland and Pictou counties. More important are the Cape Breton mines, which produce three-quarters of the output of the province. Iron ore is little mined but is easily brought from Newfoundland, so that the manufacture of iron and steel is one of the leading industries of the province. Other minerals of less importance are also found. Gypsum, used as a fertilizer and as the raw material for the manufacture of plaster of Paris, is mined in Cape Breton Island and near Minas Basin. Sandstone and granite are also quarried.

Lumbering.—More than half of the total area of Nova Scotia consists of good forest lands, containing tamarack, spruce, and fir, as well as hardwoods, such as ash, beech, birch, and maple. Much of the annual cut is exported to Great Britain, the United States, the West Indies, and South America.

Manufacturing.—The manufacturing establishments of the province include sugar and oil refineries, textile and boot and shoe factories, tanneries, pulp and paper mills, machine-shops, and factories for agricultural implements. The steel works of Sydney and New Glasgow are the most important.

Cities and Towns.—*Halifax*, the capital and chief city of the province, is built upon a fortified hill, which projects into a fine natural harbour fourteen miles long. Across the mouth of the harbour lies *Macnab Island*, also heavily fortified. The harbour is free from ice at all seasons. Halifax is an important naval centre and is often visited by the cruisers of the North Atlantic Fleet. From this port there is a large export trade in fish, lumber, and agricultural products. Among its many factories are manufacturing establishments for agricultural implements, woollens, cottons, and chocolate. It contains the Provincial Legislative Buildings, Dalhousie University, the Nova Scotia Technical College, and the Provincial Institutions for the Blind and for the Deaf. The Public Gardens are the admiration of all visitors to the city.

View of Halifax Harbour from the Citadel

Across the harbour from Halifax is *Dartmouth*, a prosperous manufacturing town.

Sydney ranks next in importance to Halifax. It is built on one of the finest harbours in Canada and has large steel works. Near by are extensive coal-fields. Other coal-mining centres are *Glace Bay*, *Sydney Mines*, *New Glasgow*, and *North Sydney*. *Amherst* is a busy industrial centre. *Pictou* has considerable shipping trade. *Yarmouth* is important because of its shipping trade. *Digby* is a seaport town, with large fishing interests. *Lunenburg* is a fishing port, sending out 150 vessels to the cod fisheries on the Banks. *Truro* is picturesquely situated at the head of *Cobequid Bay*, in the midst of a fine agricultural country. The Provincial Normal School and the Provincial Agricultural College are both located there.

Sydney Harbour, Nova Scotia

Fishing Fleet, Lunenburg, Nova Scotia

THE PROVINCE OF PRINCE EDWARD ISLAND

Position, Extent, and People.—*Prince Edward Island*, a crescent-shaped island, lying close to the two other Maritime Provinces in the southern part of the Gulf of St. Lawrence, is the smallest province in the Dominion; its total area is only 2,184 square miles. The province is the most densely populated part of the Dominion. About 89,000 people live there—about forty-one to the square mile. Almost all are of Canadian birth and either of British or of French ancestry. There are also a few Micmac Indians.

Coast-line, Surface, and Soil.—The island is very irregular in outline, as the land is penetrated by deep bays and inlets. Everywhere the coast is low, and upon the north it is bordered by sand beaches and dunes. The surface is an undulating plain. In the central part, however, there are many picturesque wooded hills, but in no case do these rise to a height of more than 500 feet. The island is well watered, but the streams are small and are all tidal. The soil is a rich sandy loam, of a peculiar deep red colour. The red soil, contrasting with the vivid green of the vegetation, gives a very distinctive character to the landscape.

Climate.—The proximity of the sea to every part of Prince Edward Island moderates considerably the heat of the summer and the cold of the winter. The air is bracing and healthful. The delightful summer climate brings many visitors, who find additional attraction in the excellent bathing beaches of the northern shore.

Industries.—Nearly the whole surface of the island is tilled, and the fertile soil, made still more productive by the use of seaweed and oyster and clamshells as fertilizers, amply repays the farmer's toil. The island deserves its name of the "Garden Province" of the Dominion. Beef, bacon, fruit, poultry, butter, cheese, and eggs are exported in large quantities. The island is famous for its potatoes; a very valuable export trade, under government supervision, is carried on in seed potatoes with the West Indies, tropical South America, and the United States.

The shallow waters surrounding the island teem with food fishes of many kinds—cod herring, mackerel, oysters, and lobsters. The products of the fisheries and the farms are the chief exports of the island.

As the land has been almost entirely cleared of trees, and as no minerals of value are found in the island, neither lumbering nor mining is carried on. Manufacturing is confined to the preparation of food products from the farm and the fisheries. Fox farming, which began on the island, still continues to be a very flourishing industry.

Farm Scene near Charlottetown, P.E.I.

Transportation.—The lines of the Canadian National Railway on the mainland and on the island are connected by a Car Ferry, which plies between Cape Tormentine in New Brunswick, and *Borden*, and is in operation all the year. There Northumberland Strait is but nine miles across. In summer there is direct communication by steamer between Charlottetown and Pictou, and between Summerside and Pointe du Chêne.

Cities and Towns.—The only city on the island is *Charlottetown*, the capital of the province. It is situated on *Hillsborough Bay*, one of the finest harbours on the North American continent. The Provincial Legislative Buildings, St. Dunstan's University, Prince of Wales College, and workshops of the Canadian National Railways are located there. *Summerside* is the centre of the oyster industry.

THE PRAIRIE PROVINCES

Position, Extent, and People.—The three *Prairie Provinces* comprise the block of land stretching for 900 miles west from Ontario to the Rocky Mountains, and for 760 miles north from the international boundary to the 60th parallel. These three provinces —*Manitoba, Saskatchewan,* and *Alberta*—are of almost the same size, each containing a little over 250,000 square miles—more than twice the area of the British Isles.

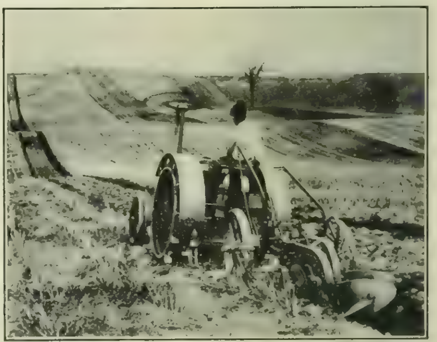
Clearing Scrub Land with a Machine, Alberta

At the time of Confederation the inhabitants of the prairies were chiefly Indians and half-breeds. After Manitoba became a province, settlers began to come from Eastern Canada and from Europe. As soon as railways were built, immigrants flooded the whole country. In a little over fifty years the population of the Prairie Provinces has grown from a few thousand to nearly two millions. The greater number of the settlers speak English as their mother-tongue. They have come from Eastern Canada, the Motherland, and the United States. There are many, also, from the various countries of Europe, who are rapidly learning the English language and becoming useful citizens of their adopted country.

Surface and Soil.—The treeless prairies occupy only the southern part of the Prairie Provinces. In Manitoba they extend only a short distance beyond *Winnipeg*; in Saskatchewan as far north as the city of *Saskatoon*; and in Alberta to about one hundred miles north of *Calgary*.

The prairies are divided into three steppes. The eastern and lowest steppe is entirely in Manitoba. It is an almost flat plain. This plain was once the bottom of a very large lake, known as *Lake Agassiz,* which long ago covered much of Manitoba, part of western Ontario, and even extended south into the United States. When the water receded, southern Manitoba was left with a coating of fine silt. This is now covered to a depth of from two to four feet with black, wonderfully fertile mould, formed from the decayed vegetation of thousands of years.

The eastern steppe is separated from the middle steppe by an escarpment, 360 to 400 feet high, which traverses Manitoba from the *Pembina Mountains* on the international boundary to the *Porcupine Hills* on the borders of Saskatchewan. West of the escarpment is open, rolling prairie. Here the country is more diversified in appearance, and there are many rough, stony hills and deep valleys. The soil of the middle steppe is lighter than that of the flat land of the first steppe, but is still extraordinarily good. This steppe includes a small part of south-western Manitoba and most of southern Saskatchewan.



Ploughing with a Tractor, Manitoba

The Lake in the Clouds, Alberta

Lake Louise is on the left and Mirror Lake on the right. The mountain scenery here is perhaps the most magnificent in Canada.

The rest of southern Saskatchewan and the whole prairie region of Alberta is in the western and highest steppe. Here the land is even more diversified than in the middle steppe. The rivers have cut deep valleys through it, and deep, narrow ravines, which were at one time the beds of tributary rivers, run out from them at right angles. These are the *coulees* of the West.

The western steppe rises gradually to the west into the foot-hills of the Rockies. Alberta, although in its southern part a prairie province, contains within its borders part of the eastern side of the Rockies, with its abrupt slopes and irregular surface deeply cut by canyons and ravines. This part of Alberta is famous for its mountain scenery, and *Banff*, *Lake Louise*, and *Jasper Park* are visited by thousands of tourists. The most important of the mountain passes are the *Crowsnest* and the *Kicking Horse*, which are both traversed by lines of the Canadian Pacific, and the *Yellowhead*, which is the route taken by the Canadian National line.

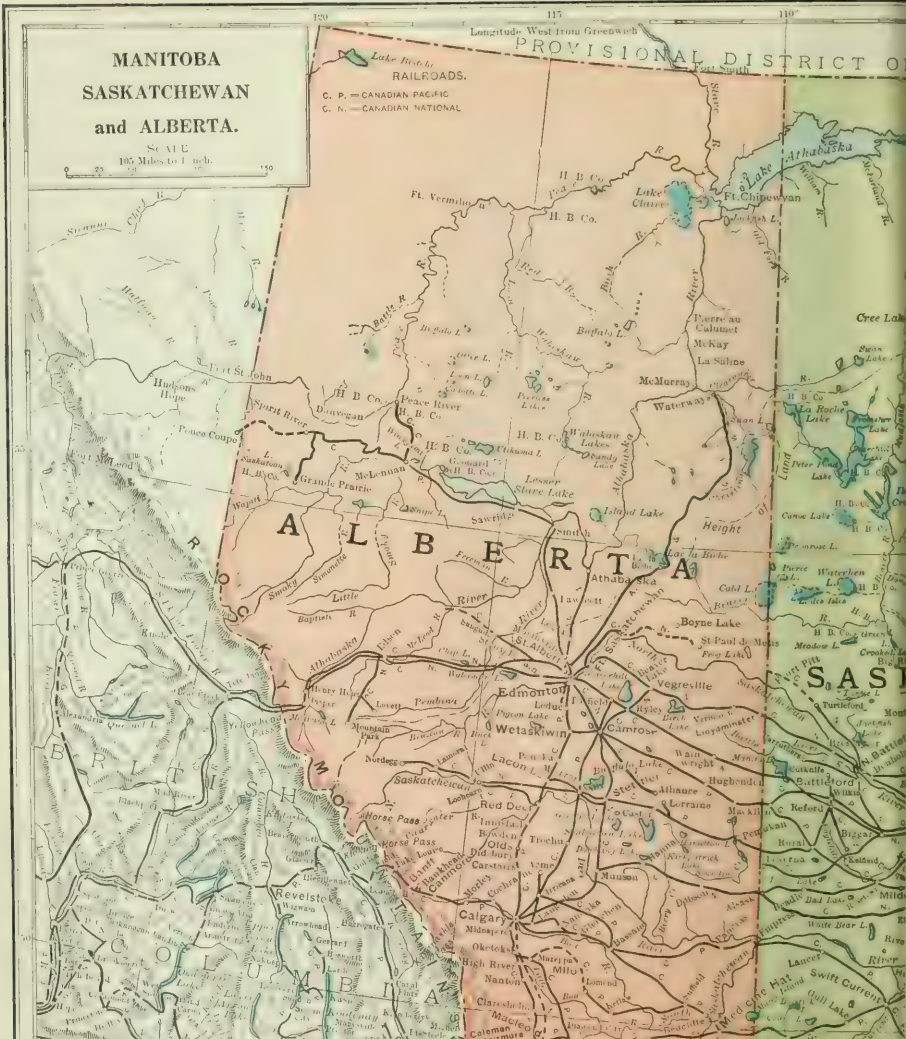
North of the prairies in Alberta and Saskatchewan is a belt of park land, where open prairie alternates with clumps of woodland. The innumerable coppices of birch and poplar provide fuel for the settler, and also serve to shelter his house and stock from the cutting winter winds. The rainfall is heavier than farther south, and the country is dotted with lakes and intersected by countless creeks and streams. These make it particularly well suited for stock-raising. The soil is even better than that of the open prairies.

North of the Saskatchewan River, the land is more heavily timbered, although there is much open land even there. Northern Alberta is being opened up much more quickly than northern Saskatchewan. The *Northern Alberta Railways* run into the *Peace River District* on the west, and to *Waterways*, near McMurray, on the east. Settlers are rapidly making homes along the routes of these pioneer lines. Already there are many prosperous settlements in the valley of the Peace River.

In Manitoba, also, a well-wooded zone is found north-east of the prairie. It contains many lakes, three of which *Winnipeg*, *Manitoba*, and *Winnipegosis*—are of great size. Here, too, there is much fertile land well suited to agriculture.

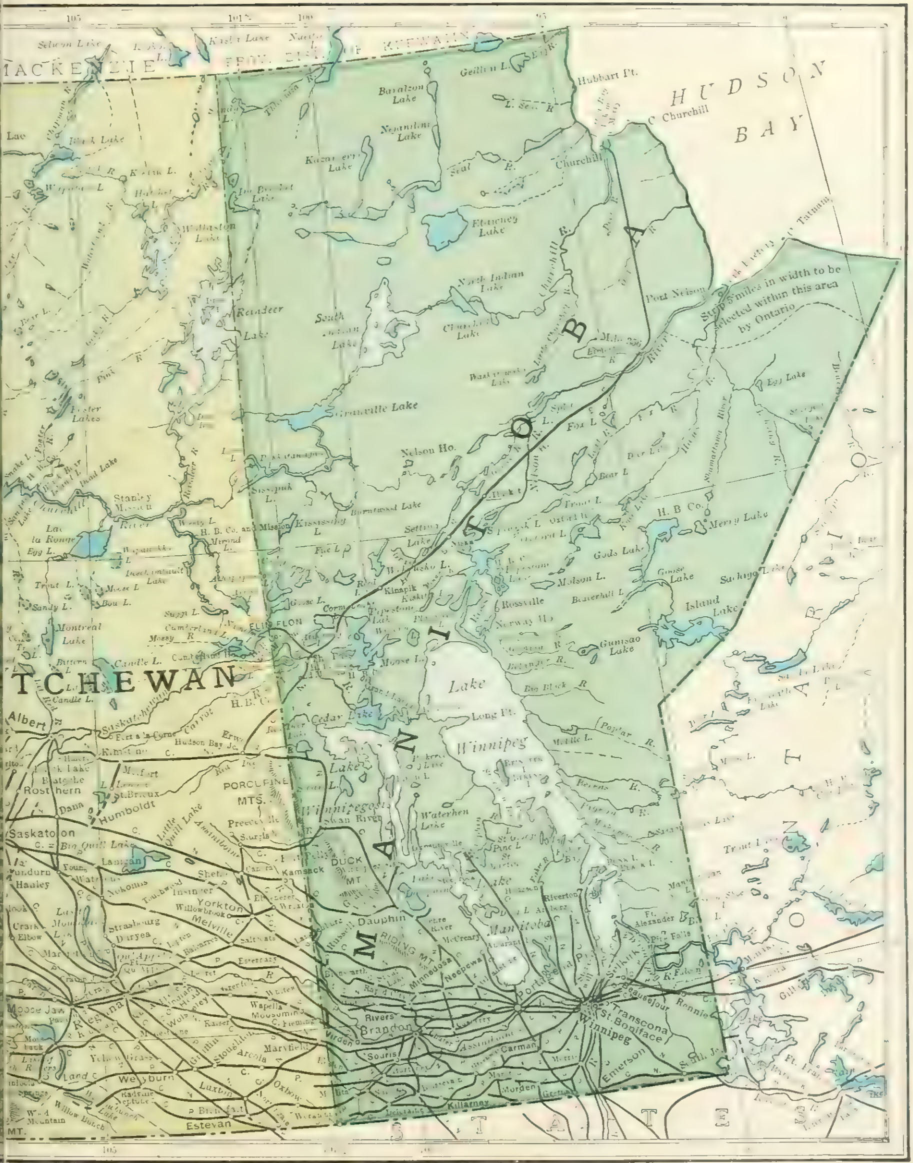
A Sheep Range, Saskatchewan

In addition to the sheep which run on the ranges, there are many raised on the small farms of all three of the Prairie Provinces.



MANITOBA
SASKATCHEWAN
and ALBERTA.

SCALE
105 Miles to 1 inch.

MACKENZIE
HUDSON BAY
C. Churchill
Hubbart Pt.
Churchill
Churchill R.
MANITOBA
TCHEWAN
ONTARIO
STATE
Port Nelson
Strip 5 miles in width to be selected within this area by Ontario
C. Tatnam
Reindeer Lake
Wollaston Lake
Baralzon Lake
Nejanilini Lake
Kazan Lake
Etawney Lake
North Indian Lake
South Indian Lake
Granville Lake
Nelson Ho.
Burntwood Lake
Setting Lake
Kississing L.
Sisipuk L.
Stanley Mission
Lac la Ronge
Egg L.
Montreal Lake
Trout L.
Sandy L.
Candle L.
Cumberland L.
FLIN FLON
Cormorant L.
Moose L.
Cedar Lake
Kinapik
Pipestone Lake
Split L.
Fox L.
Bear L.
Trout L.
Oxford L.
Gods Lake
Molson L.
Island Lake
Goose Lake
Sachigo Lake
Egg Lake
Merry Lake
H. B. Co.
Rossville
Norway Ho.
Gunisao Lake
Long Pt.
Lake Winnipeg
Poplar R.
Berens R.
Pigeon R.
Lake Winnipegosis
Waterhen Lake
Lake Manitoba
Swan River
DUCK MT.
PORCUPINE MTS.
RIDING MT.
Dauphin
Riverton
Ft. Alexander
Pine Falls
Selkirk
Beausejour
Rennie
Transcona
St. Boniface
Winnipeg
Portage la Prairie
Neepawa
Minnedosa
McCreary
Rivers
Brandon
Virden
Souris
Carman
Morden
Killarney
Emerson
Saskatchewan R.
Prince Albert
Rosthern
Humboldt
Saskatoon
Hanley
Watrous
Nokomis
Kamsack
Yorkton
Melville
Strasbourg
Regina
Moose Jaw
Weyburn
Estevan
Arcola
Oxbow
Hudson Bay Jc.
Big Quill Lake
Little Quill Lake
Preeceville
Sturgis
Wapella
Moosomin
Fleming
Willow Bunch
Wood Mountain
105
101½
100
95

The great lakes of Manitoba are just at the edge of the Laurentian Highland, which includes the whole northern and north-eastern portion of the province. This is a typical Laurentian area, with northern forests, mineral-bearing rock, fur-bearing animals, many lakes, and turbulent rivers.

A Cattle Range, Alberta

Lakes and Rivers.—There are many small lakes in depressions scattered over the prairie. Many of these have no outlet, and are, consequently, saline. The majority are merely salt marshes during the greater part of the year, becoming lakes only during the months of heavy rainfall.

In the central and northern parts of the provinces there are several large lakes and a host of smaller ones. *Lake Winnipeg,* with a length of 260 miles and an average width of thirty miles, is much the largest and most important of them all. It is the centre of the drainage system of the southern and central parts of the three provinces. Into it flow the *Saskatchewan River* from the west, the *Red River* from the south, and the *Winnipeg River* from the east. Its overflow forms the *Nelson River,* flowing north-east into Hudson Bay. *Lake Athabaska* ranks next in size to Lake Winnipeg. It is partly in Saskatchewan and partly in Alberta. *Lakes Manitoba* and *Winnipegosis* in Manitoba, *Wollaston Lake* and *Reindeer Lake* in Saskatchewan, and *Lesser Slave Lake* in Alberta are all of considerable importance.

The Saskatchewan is the great river of the prairies. Its two branches—the *North Saskatchewan* and the *South Saskatchewan*—drain almost the whole of southern and central Alberta and much of Saskatchewan. Its source is in the Rockies, and during the summer the melting snows of the mountains supply it with a large volume of water. From its source to its mouth at Lake Winnipeg the river flows for 1,200 miles across the three Prairie Provinces.

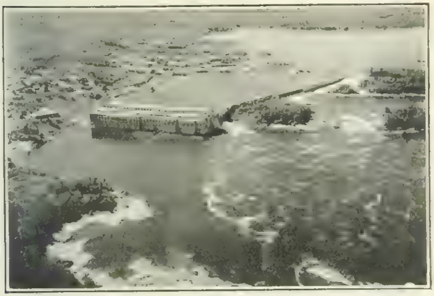
The Red River rises in the United States, crosses the international boundary at *Pembina,* and flows for the last hundred miles of its course through Manitoba. From the west it receives the *Assiniboine River.* The Assiniboine, with its chief tributaries, the *Souris* and the *Qu'Appelle,* waters a splendid farming country in the south-western corner of Manitoba and the south-eastern part of Saskatchewan.

The Winnipeg River, the outlet of *Lake of the Woods,* drains the south-eastern corner of Manitoba. Its course is marked by many rapids. The water-power so provided is now being used to generate electricity for the city of Winnipeg.

The Nelson River, which drains the lake region of Manitoba to Hudson Bay, and the *Churchill,* farther to the north, are the chief rivers of northern Manitoba. For much of its course the Nelson flows through comparatively level, well-wooded country. Here the ancient Laurentian rocks are mantled with a deep covering of sand and clay, forming a good soil for the cultivation of cereals. The

Branding Cattle on the Range, Alberta
The ranges are not now so extensive as they once were.

course of the Churchill is through rougher country, and the river has many falls and rapids. Even as far north as the Churchill there are many tracts of arable land, and a considerable quantity of good spruce grows in its valley. At the mouth of the river is *Churchill*, the terminus of the *Hudson Bay Railway*, which runs from *The Pas*, in Manitoba, to Hudson Bay. Farther North is the Northern Plain, on which little but mosses, lichens, and a few berries can grow.



Power Dam on the Winnipeg River, Manitoba
This is one of the plants that supply electric power to Winnipeg.

A small area in southern Saskatchewan and Alberta is drained by tributaries of the Missouri. The most important of these is the *Milk River*, which, after a course of 100 miles in Alberta, crosses the international boundary and joins the Missouri.

Northern Alberta has two great rivers—the *Peace* and the *Athabaska*. These rivers, with their tributaries, are important as highways into the still more distant northland beyond the confines of the province. Their waters reach the Arctic Ocean by way of the *Mackenzie River*.

Climate.—The Prairie Provinces have a comparatively dry and clear, and so a very healthful climate. The winter, while marked by low temperatures, is bright and invigorating, the spring and the autumn are delightful, and the long, warm summer days bring crops to maturity with surprising rapidity. The average rainfall is much less than in Ontario, varying from twelve or thirteen inches in the dry south-west to eighteen or twenty inches in the north and east. Though light, the rains come chiefly in June and July, when needed most. The ground freezes to a considerable depth during the winter, and the seeding is done before it is completely thawed. The moisture, welling up from beneath as the lower levels thaw out, assures an ample supply for the young plants during April and May. This compensates for the light rainfall.

In Alberta, the temperatures, in general, are not so extreme as in Saskatchewan and Manitoba. Although the province extends for 760 miles from north to south, the summers are as warm at *Dunvegan*, on the Peace River, as they are at *Cardston*, close to the international boundary.

The reason for this even spread of heat is found in the altitude of the land. The land slopes gently from south to north, and the lower altitude of northern Alberta offsets the higher latitude. The Chinook wind has also an equalizing effect in moderating the winter climate. The Chinook is a warm, dry wind, caused by air currents descending the eastern slopes of the Rockies. As the air descends, it becomes warm, and, blowing eastward over the land, sweeps away the snow and raises the temperature as it goes. The Chinook has been known to cause a rise of 60° in temperature in the course of a few hours.

Cutting and threshing Wheat, Saskatchewan
As it goes along, this machine, drawn by a tractor, cuts the wheat and threshes it. Hundreds of these machines are now in use.

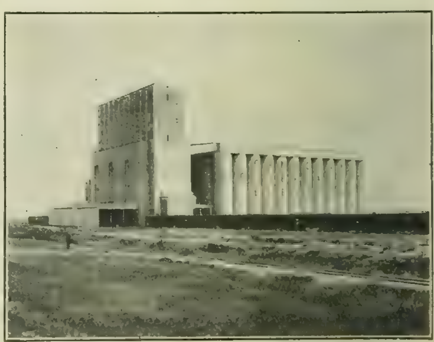
Binders at Work on the Prairie, Saskatchewan

Agriculture.—The Prairie Provinces well deserve their title of "The Granary of the Empire." In all three, hard wheat grows to perfection, owing to a soil rich in nitrates, the dry climate, which ensures the absence of rust, and the large amount of sunshine during the long, clear days of summer. Southern Manitoba and the country east of *Moose Jaw* in Saskatchewan are particularly famous wheat-growing districts. The western wheats possess a peculiarly hard quality which makes them very valuable as bread flours.

Oats rank next in importance to wheat. Barley, flax, rye, peas, beans, hay, potatoes, turnips, and fodder corn are also widely grown.

The method of handling the great grain crops of the Prairie Provinces is quite different from that used in Eastern Canada. The grain is threshed in the fields and is generally hauled away at once to elevators. These are tall buildings, equipped with bins and machinery to lift the grain into them. Almost every town and village along the railway lines of the West has one or more elevators. From the elevators the grain can be easily transferred into cars and carried to the mills or to the lake ports of *Port Arthur* and *Fort William*. Here there are enormous elevators. A large part of the grain crop of Alberta is now shipped to Great Britain by way of Vancouver and the Panama Canal.

The early settlers on the prairies turned their attention almost wholly to grain-growing, but the trend has been more and more toward mixed farming. Dairy farming is becoming an important branch of agriculture, and cattle-raising is an industry of ever increasing importance, especially in southwestern Saskatchewan and southern Alberta. There cattle, horses, and sheep thrive the whole year round on the short, crisp herbage called buffalo-grass. In the spring and early summer this grass is green and juicy; later it dries and becomes a natural hay, retaining all its nutritious qualities. Cattle pastured upon it make beef of the first quality. Because of the Chinook winds, which



The Canadian Government Elevator, Saskatoon melt the snow and lay bare the grass, horses and cattle can live out on the prairie in these districts all through the winter, pasturing on the natural hay of the land.

Loading Grain into a Freighter

The elevators at Fort William, Port Arthur, and Vancouver are splendidly equipped for the loading of grain into freighters.

In recent years great irrigation enterprises, which will eventually water over 1,000,000 acres, have been put in operation in southern Alberta at *Calgary, Lethbridge, Bassano,* and *Medicine Hat.* The results have been amazing, and record crops of grain, vegetables, and alfalfa are now grown in these districts.

As has been said, dairy-farming is rapidly coming to the front in all three provinces. In particular, in Alberta much attention is being paid to the raising of poultry for export to the other provinces both east and west. A profitable trade in eggs is carried on with British Columbia and the Orient. In southern Alberta enormous quantities of beets are grown to supply the beet-sugar factories.

Mining.—Coal is the chief mineral product of the Prairie Provinces. Alberta has enormous deposits of both bituminous and anthracite coal. It is estimated that the coal resources of the province exceed 670 billions of tons. Although development has just begun, already Alberta promises to become one of the chief coal producing and exporting provinces of the Dominion. There are also extensive deposits of lignite coal in southern Saskatchewan and Manitoba. Those in Manitoba have not been developed to any extent, but about thirty mines in Saskatchewan help to supply local needs.

Alberta is blessed with a large supply of natural gas, providing the province with cheap power, fuel, and light. Petroleum is found in the vicinity of Calgary and along the Athabaska River. There are also immense beds of tar sands east of the Athabaska estimated to contain at least six billion tons of bitumen.

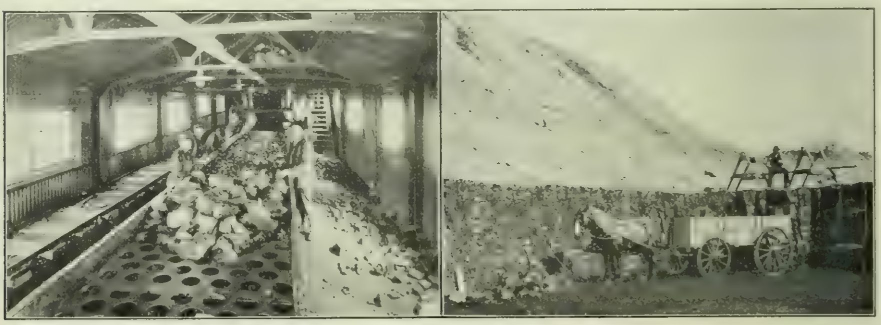
The Prairie Provinces are well supplied with clay and stone for the manufacture of building materials. Gypsum is obtained at *Gypsumville,* north-east of Lake Manitoba. It is shipped to Winnipeg, where it is made into wall plaster and plaster of Paris.

The mineral resources of the Laurentian sections of both Manitoba and Saskatchewan are being throughly explored, and many mines have been opened. The *Flin Flon* area in the two provinces, where there are very valuable copper deposits, is being worked, and a railway is now in operation into the district.

The Union Stock-yards, St. Boniface, Manitoba

Lumbering.—In the east of Manitoba the edge of the forest, which covers north-western Ontario projects a little way into the province. The dividing line between woodland and prairie runs to the north-west from a point not far to the west of Lake of the Woods. In the south-east, therefore, the province has a narrow belt of forested land along its eastern boundary, which gradually widens to the north and merges into the wooded lands of the lake region. This eastern forest strip furnishes much of the timber used in Manitoba.

In the forested lands of northern Manitoba, Saskatchewan, and Alberta, lumbering is carried on extensively, and many saw-mills are in operation. Although the individual trees are small, the immense tracts of jack-pine, poplar, spruce, and tamarack provide fuel and building material in abundance. In all three provinces a number of very large areas—over 50,000 square miles in all—have been set aside by the Dominion Government as forest reserves.



Coal-mining, Alberta

The making of pulp and paper is becoming a very valuable industry in Manitoba. A huge mill at *Pine Falls* manufactures an immense quantity of newsprint.

Fishing.—Fishing is an industry of some importance in Manitoba. Lakes Winnipeg and Manitoba are noted fishing-grounds. Whitefish of unsurpassed quality form the greater part of the catch, although sturgeon, pike, and pickerel are also taken. The catch is large enough to supply the needs of the province and to provide a surplus for export to the United States.

The lakes and streams of Saskatchewan and Alberta teem with fish. These provide wholesome food for the settlers. Although there are fish in plenty for millions of people, the development of the fisheries on a commercial scale is still in its infancy.

Fur-trading.—The northern forests still abound with fur-bearing animals, although many thousands have been caught in past years, and although furs to the value of many millions of dollars have been exported since the Hudson's Bay Company first entered the country. Bear, wolf, otter, beaver, marten, and mink skins are still brought in to the trading-posts of the north in large numbers. *Prince Albert* and *Battleford* are the leading centres of the fur-trade in Saskatchewan; *Edmonton*, in Alberta; and *Winnipeg*, in Manitoba. To Edmonton are brought the skins taken in the whole Mackenzie Basin. As the musk-ox, which ranges the Northern Plain, is now protected, its pelt is no longer an article of commerce. Many companies and private traders are engaged in the lucrative business of fur-trading.

Manufacturing.—Though the Prairie Provinces are mainly an agricultural country, and the total value of their manufactured products and the products of their mines, forests, and fisheries combined is much less than that of their farm crops, yet, in Manitoba, manufacturing takes first place. The growth of manufacturing in the three provinces has been quite rapid. Flour-milling and meat-packing are important. Lime-burning and brick-making employ many hands. Wire fencing, leather goods, carriages, and farm machinery are manufactured. There are also foundries and machine shops at various points.

Manufacturing is developed to a greater extent in Alberta than in Saskatchewan, owing, partly at least, to the cheap fuel which the province possesses in her coal and natural gas.

Cities and Towns.—*Winnipeg*, the capital of Manitoba, is the only considerable city in the province. Sixty years ago a mere trading-post of the Hudson's Bay Company, to-day it is the great metropolis of the Canadian West. Its situation at the junction of the Red and Assiniboine Rivers at the entrance to the great prairie country is peculiarly favourable, as practically all commerce between the East and the West must pass through it. The wonderful railway facilities of Winnipeg render it the chief distributing centre for the West. It is also one of the largest grain markets in the world. The magnificent water-power near at hand has helped it to become a prosperous manufacturing centre. The largest abattoirs in the West are at Winnipeg and St. Boniface.

Winnipeg is noted for its educational institutions, which include the University of Manitoba with its affiliated colleges. The splendid buildings of the Agricultural College, and also the Institution for the Deaf, are within a few miles of the city. The Provincial Legislative Buildings are outstanding. *St. Boniface*, on the Red River opposite Winnipeg, has large industrial interests.

Brandon, on the Assiniboine River, is the second city of Manitoba. Its wholesale trade is very large, and its grain elevators, flour-mills, and machine-shops help to make it a bustling, thriving city. It is the seat of Brandon College.

Portage la Prairie, on the main line of the two great continental railways, fifty-six miles west of Winnipeg, lies in the midst of a rich agricultural country known as the "Portage Plains." It has large grain elevators and flour-mills.

Regina, on the main line of the Canadian Pacific Railway, is the capital and largest city of Saskatchewan. It is a commercial and distributing centre and has direct railway connection with all the important points in the West. A large oil refinery gives employment to many men. Metal-working is one of the chief industries. The beautiful Provincial Legislative Buildings are situated there.

Saskatoon, situated on the South Saskatchewan, is the second city of Saskatchewan. It is a busy commercial city, being an important railway and distributing centre. Flour-milling and the making of road machinery are among its many industries. Saskatoon is the seat of the University of Saskatchewan.

Buildings of the Agricultural College, near Winnipeg

Moose Jaw is the third city of the province. It has excellent railway facilities, being the terminal point of a branch of the Soo line which runs to St. Paul, Minneapolis, and Sault Ste. Marie. It has large stock-yards, big flour-mills, and capacious elevators.

Prince Albert, situated at the edge of the wooded lands in the North, is the chief centre for the lumber, fur, and fish trades.

Edmonton, the capital of Alberta, is splendidly situated on a table-land 200 feet above the North Saskatchewan River. It is the centre of northern traffic and is on the main line of the Canadian National Railways. It is the gateway to northern Alberta. Coal is near at hand, and natural gas is supplied from the wells at *Viking*, about eighty miles distant. The city has many large manufacturing establishments, including flour-mills, saw-mills, and meat-packing plants. The

Provincial Legislative Buildings and the buildings of the University of Alberta are imposing structures.

A Clay Manufacturing Plant, Medicine Hat, Alberta

Calgary is the largest city and the commercial metropolis of Alberta. It is situated on the main line of the Canadian Pacific, in the valley of the *Bow River*, a tributary of the South Saskatchewan. It is the chief distributing centre for southern Alberta, and its wholesale trade is very large. Its manufactures include meat-packing plants, flour-mills, harness factories, lumber-mills, and brick and cement works. A large oil refinery is now in operation. Electricity is supplied from waterfalls on the Bow River, and natural gas is piped from the gas fields in the vicinity. Coal in abundance is found in the immediate neighbourhood. Calgary is the headquarters of the irrigation districts of the province.

Medicine Hat is the thriving centre of a ranching and farming country. The immense supplies of natural gas in the vicinity afford cheap and abundant fuel. It is among the foremost milling towns of Canada. Bricks and sewer pipes are among the most important of its manufactures.

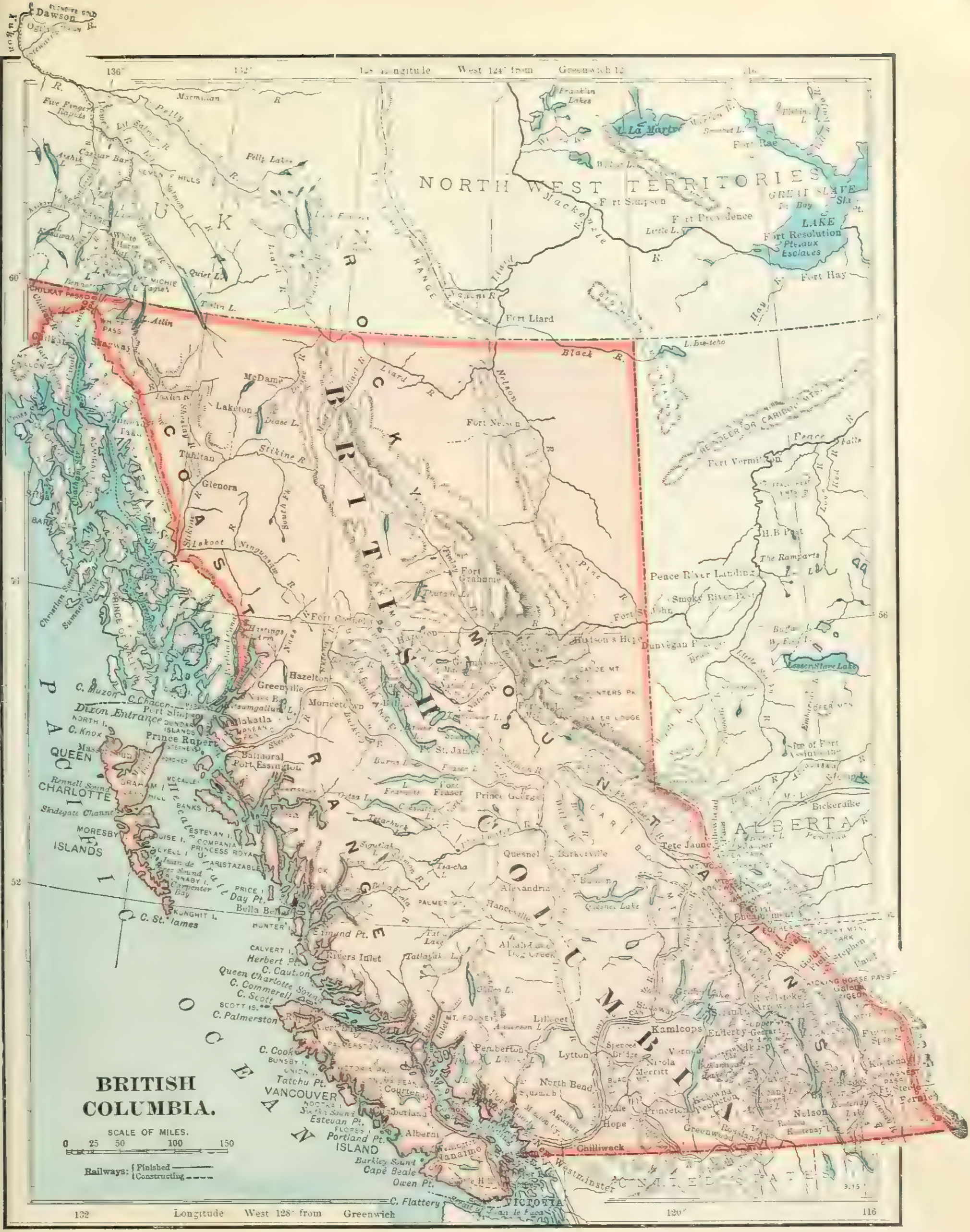
Lethbridge is the centre both of a great coal-mining district and of a fine agricultural country, which has been wonderfully improved by irrigation.

THE PROVINCE OF BRITISH COLUMBIA

Position, Extent, and People.—*British Columbia*, the most westerly of the Canadian provinces, extends from the 49th to the 60th parallel of latitude, and from Alberta to the Pacific Ocean and southern Alaska. It averages 425 miles in width and has an area of 355,000 square miles. It ranks third in size among the provinces, being surpassed only by Quebec and Ontario.

When British Columbia entered Confederation, the white population numbered only about 10,000. Since then the population has steadily increased and now totals over 500,000. Owing to the position of British Columbia on the sea-board facing the Orient, there has been a considerable immigration from China and Japan, and about 30,000 Chinese and Japanese have made their homes in the province. There are also about 20,000 Indians. The Chinese are mainly engaged in fishing, market-gardening, and domestic service; the Japanese make their living by fishing and lumbering; the Indians live for the most part upon their reservations. The white population is almost entirely of Canadian or British extraction.

The Harbour of Prince Rupert, British Columbia
Prince Rupert is the northern terminus of the Canadian National Railways on the Pacific Coast.



BRITISH COLUMBIA.

Coast-line.—Only the southern half of the province fronts on the Pacific, for a long, narrow coastal strip belonging to Alaska cuts off the northern portion from the sea. The coast-line, about 500 miles in length by air-line, is so irregular and indented with long inlets, reaching far into the land, that the mainland of the province has an actual shore-line measuring 7,000 miles. If the shore-line of the islands fringing the mainland be added, British Columbia can boast of 15,000 miles of coast bordering on the Pacific Ocean.

Pulp and Paper Mills, Howe Sound, British Columbia

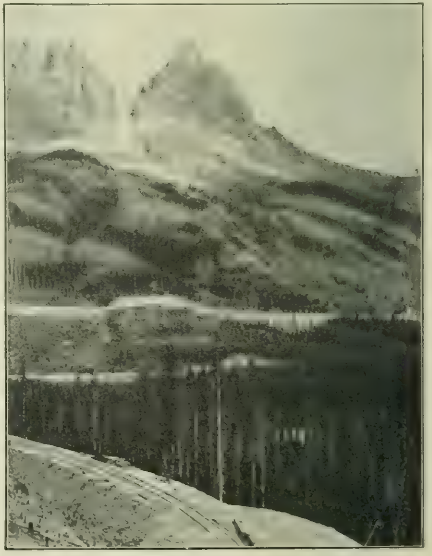
The islands along the coast are very numerous. The most important is *Vancouver Island*, separated from the State of Washington by *Juan de Fuca Strait* and from the mainland of British Columbia by the *Strait of Georgia* and *Queen Charlotte Sound*. Vancouver Island is 285 miles long, and from forty to eighty miles wide, with an area of 20,000 square miles—almost the size of Nova Scotia. The next largest are the islands forming the *Queen Charlotte* group, separated from the mainland by *Hecate Strait*.

The multitude of bays and sounds along the whole coast, both of the mainland and of the larger islands, provide numerous harbours. In some of the inlets the water is too deep to afford anchorage, but in all there is shelter from the storms of the Pacific.

Surface and Soil.—The province is traversed from north to south by four principal ranges of mountains—the *Rocky* and *Selkirk Ranges* on the east, and the *Coast* and *Island Ranges* on the west. The Rocky Mountain Range preserves its continuity, but the Selkirk Range is broken and confused. Four mountainous areas together form the Selkirk Range—the *Purcell*, the *Selkirk*, the *Gold*, and the *Cariboo Mountains*.

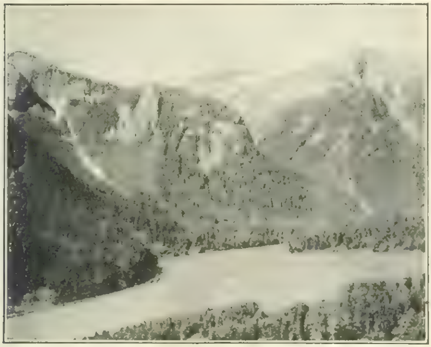
Between the Selkirks and the Rockies lies a remarkable valley, extending northerly from the international boundary for a distance of 700 miles. West of the Selkirks is the great *Interior Plateau*. Much of the plateau has been so eroded by streams that in many parts its surface presents the appearance of a succession of mountains. In other places the surface is less broken, and there are wide, rolling plains, dotted with low hills. These are excellent farming and pasture lands.

The Coast Range is considerably lower than either the Selkirks or the Rockies, averaging about 6,000 feet in height. The Island Range, paralleling the Coast Range, is mostly submerged. Only the highest parts are above water. These form the thousands of islands along the coast.



Cathedral Mountain, Field, British Columbia

Although British Columbia is so mountainous, it contains much good soil in the valleys and on the alluvial plains through which the rivers flow when nearing the sea. Even upon the mountain slopes there is sufficient depth of soil to nourish the immense forests, which are distinctive features of the province.



A Scene on the Skeena River, British Columbia

Rivers and Lakes.—The rivers and lakes of British Columbia are very different from those of the rest of Canada. The rivers are turbulent, rushing streams, which turn and double and twist as they sweep around the bases of the mountains in their eager rush to the sea. Sometimes they expand into long, narrow lakes, often of great depth. In British Columbia there are no long stretches of river navigation without serious impediments. There are no great inland seas such as those of Eastern and Central Canada. The province is, however, literally studded with small lakes, which, nestling in placid beauty in the mountain valleys, are a delightful contrast to the stern grandeur of the surrounding peaks.

British Columbia is the watershed of the Pacific slope. All the great rivers flowing into the Pacific, with the exception of the Colorado, take their rise within its boundaries. Of these the most important are the *Columbia*, which flows for 600 miles through the province before crossing the international boundary, forming in its course the *Upper* and *Lower Arrow Lakes*; the *Fraser*, 750 miles long, which flows for the last eighty miles of its course through a fertile alluvial plain; and the *Skeena* and the *Stikine*, which drain the north-western part of the province. The north-eastern portion is drained by the *Peace* and *Liard Rivers*, which flow toward the north-east and eventually pour their waters into the *Mackenzie River*.

Scenery.—The mountains of British Columbia, especially the Rockies and the Selkirk Range, present to the traveller an endless variety of scenery, which ranks with the finest in the world. They themselves are unspeakably grand. There is no monotony in them, for the jagged outlines of the huge masses of rock flung high against the sky are ever different, ever changing, as the traveller journeys on. There is endless variety, too, in the narrow canyons, in which, far beneath, the mountain torrents rush headlong to the distant sea, and in the green valleys and grassy meadows nestling at the base of the frowning mountains. To them the eye turns with relief when wearied with the vain attempt to grasp the gigantic proportions of the mountains.

There is a feast of colour everywhere; the dark gray of soaring pinnacles of bare rock; the dazzling white of the eternal snow; the brilliant green of grassy plots, and the deeper hue of the forest trees; the white foam of turbulent streams; the glint of mountain lakes; the blazing patches of vivid red, purple, and yellow which splotch the canyon

The Junction of the Bulkley and Skeena Rivers walls. The mountains never grow wearisome to the traveller; not in a whole life-time could he discover all their beauty and their grandeur.

Climate.—The climate of British Columbia varies considerably in different parts. The westerlies, blowing over the warm North Pacific Drift, exercise a moderating influence upon the coast and provide a copious rainfall. The westerlies are cooled to a certain extent by the comparatively low Coast Range and yield a portion of their moisture upon the western slopes. In the lee of the mountains there is a dry belt of country with little rainfall. The Selkirks, being much higher than the Coast Range, cool the west winds still more, and force them to give up most of the moisture which they have retained after passing the Coast Range. There is, therefore, a heavy snowfall upon the peaks of the Selkirks. The still higher Rockies complete the process of condensation, but the precipitation of moisture upon them is comparatively slight. In this way a series of alternate moist and dry belts is formed.

A big Cedar, Stanley Park, Vancouver

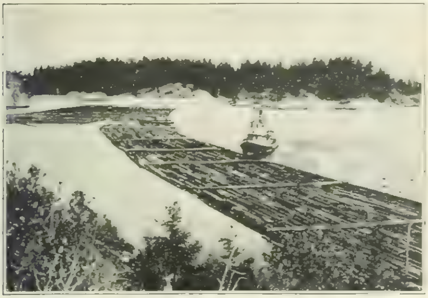
The climate of Vancouver Island and the coast generally is much like that of England; the summers are warm, with much bright sunshine, while severe frosts are uncommon in winter. To the east of the Coast Range the climate is quite different. The summers are warmer, the winters are colder, and the rainfall is rather light. In the extreme north the winters are severe.

Agriculture.—Although a large part of British Columbia is mountainous and covered with forest growth, it is estimated that the province has over 12,000,000 acres of land suitable for agriculture. Only a small part of this area is now under cultivation. Further, much of this acreage is fit only for pasture. In the valleys, however, and in the bottom lands at the mouths of the rivers, there is a great deal of really valuable agricultural land, and these lands produce abundant crops. Wheat, barley, hops, and roots and vegetables of all kinds do well. Sugar-beets, celery, and tobacco are beginning to be cultivated on quite a large scale. In fruit-growing, especially, the province has made great progress. Apples, grapes, apricots, peaches, plums, and cherries grow to perfection, as well as strawberries and other small fruits. Good pasture land makes dairying and stock-raising easy and profitable.

Lumbering.—The magnificent forests of British Columbia are her greatest asset. Throughout the coast region, and to a smaller extent the wet belts of the interior, there are huge tracts of superb trees, such as the Douglas fir, hemlock, red and yellow cedar, spruce, larch, and pine. The coniferous trees attain an immense size. A diameter of eight to ten feet is not unusual, and there are individual specimens with a girth of fifty feet or more.

Cutting Logs by Machinery, British Columbia

The cedar cut is used mainly for the manufacture of shingles. The spruce yields the raw material for pulp and paper manufacture. The timber of British Columbia is in constant demand in Alberta, Saskatchewan, and Manitoba, and much is also sent to Eastern Canada, the United Kingdom, China, Japan, South America, Africa, New Zealand, and Australia.



A Lumber Raft near Vancouver, British Columbia

Mining.—The mountains of the province are rich in minerals. Gold, silver, copper, lead, coal, and iron are all found, copper yielding the most abundantly. The coal deposits both on Vancouver Island and on the mainland are especially noteworthy. It has been estimated that they contain forty billion tons. At the present rate of removal, that is sufficient to last for 13,000 years.

Fishing.—The waters of the North Pacific around the coast of British Columbia rival those of the North Atlantic in productiveness, and fishing is one of the great industries of the province. British Columbia for some time has ranked first among the provinces in the value of fisheries, and now contributes nearly one-half of the entire production of the Dominion. The fish of outstanding importance is the salmon. When the spawning season comes, the salmon move from the sea into the rivers in immense numbers.

The salmon are caught while entering the rivers from the ocean during the season from June to September. Many forms of traps, nets, and fish wheels are used for this purpose. If most of them were caught on their way up the river, the fish would soon all be destroyed. To avoid this, the government regulates the placing of nets, so that a large number of the fish may still get past the nets to the spawning grounds. After the fish are caught, they are sent to large modern canneries, where the work of cleaning and canning them is done by machinery. Immense numbers are handled in a very short time without being touched by hand.

The halibut fisheries are also valuable. *Prince Rupert* is the centre of this branch of the industry. One of the largest cold storage plants in the world devoted exclusively to fish has been erected there, and from it halibut, packed in ice, is shipped as far as the Atlantic sea-board. Herring and black cod are also caught. The whale fisheries are of considerable importance.

Manufacturing.—The manufactures of British Columbia are closely connected with the natural resources of the province. Lumber is manufactured, in all its forms, for home consumption and export purposes. Large smelters are operated in the mining districts, and coke is manufactured on a large scale at Fernie and other places. Pulp and paper production is steadily increasing in importance. Salmon-canning is, of course, one of the largest industries. There is a large sugar refinery at Vancouver. Victoria and Vancouver have well-equipped ship-building yards.

A Salmon Catch, British Columbia

Cities and Towns.—*Victoria,* the capital of British Columbia, is built upon the eastern side of a narrow inlet opening into Vancouver Island from the Strait of Juan de Fuca. There are excellent harbour facilities. Although the commerce of the city is considerable, and although there are several important industries in it, Victoria is essentially a residential city. The Legislative Buildings, which overlook the harbour, are among the most beautiful and imposing structures on the continent. Three miles from Victoria is the fine harbour of *Esquimalt*; it has a large dry-dock. Near the city, also, is erected a Dominion Observatory, possessing a telescope which is one of the largest in the world.

The Inner Harbour, Victoria, British Columbia

Vancouver, with its important rail and ocean connections, is the chief city of the province, and the third in population in the Dominion. It is situated on a peninsula jutting out into *Burrard Inlet*, and has one of the finest natural harbours in the world. Its dockyard facilities are excellent. Vancouver is the western gateway of the Dominion, and its import and export business is very large. It is also the headquarters of the larger industrial enterprises of the province, which include the manufacture of lumber, the refining of ore, salmon-canning, sugar-refining, and ship-building. As much of the Alberta grain crop passes through the port, the city has several huge elevators. It is the seat of the University of British Columbia.

New Westminster, twelve miles from Vancouver and connected with it by both steam and electric railways, has large fishing and lumbering interests.

Nanaimo, on the east coast of Vancouver Island, has large coal mines in the vicinity. The surrounding country is good farm land, and both fruit-growing and mixed farming are rapidly increasing.

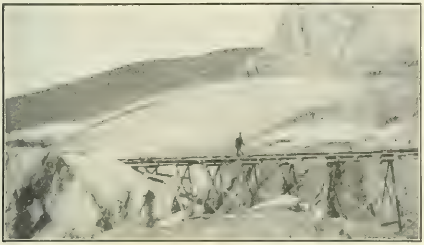
Prince Rupert, one of the western terminals of the Canadian National Railways, is a port of growing importance. It is also the headquarters of the fisheries of the north-western coast.

Rossland, surrounded by hills containing immense deposits of iron and copper ore, is an important mining city. At *Trail*, fourteen miles away, are immense smelting works, a lead and silver refinery, and a factory for making lead pipe. *Fernie*, on the Crowsnest Pass Railway, is a coal-mining centre. Great quantities of coke for smelting purposes are made near by. *Nelson*, on *Kootenay Lake*, is the commercial centre of the southern interior part of the province. It has a large smelter, a flour-mill, and fruit-packing establishments. *Kamloops*, on the line of two transcontinental railways about 250 miles east of Vancouver, is the distributing centre for a large agricultural, mining, and lumbering district.

A Section of the Waterfront, Vancouver, B.C.

THE YUKON TERRITORY

Position, Extent, and People.—The *Yukon Territory* comprises the farthest north-west portion of the Dominion. It extends from the northern limit of British Columbia to the Arctic Ocean, and from the Rockies to Alaska. No part of it touches the Pacific Ocean, although at one point it comes within thirty miles of tidewater. The Territory has an area of over 207,000 square miles.



Hydraulic Mining, Yukon Territory

Prior to the discovery of gold in the *Klondike,* the Yukon Territory was inhabited only by a few Indians, who roamed undisturbed over its surface. Then came the great rush to the new gold fields, and thousands of men poured into the country. The population rose in a few years to nearly 30,000. Since then there has been a steady decrease, until now the population numbers only a little over 4,000.

Surface and Climate.—The Territory forms part of the Rocky Mountain system and is, in general, mountainous. There are, however, many stretches of rolling land, with wide flats in the river valleys. The lower tracts of the country are covered with a thick coating of clay, gravel, or sand.

Although the lakes of the Territory are fairly numerous, they are all comparatively small, with a combined area of about 700 square miles. There are, however, many large rivers. The *Liard,* in the south, drains a small part of the Territory to the *Mackenzie River.* The *Yukon,* and its tributaries, the *Lewes, Pelly, Stewart,* and *Porcupine,* are navigable over nearly their whole length, and drain the rest of the Territory to Bering Sea.

The moderating winds of the Pacific are barred from the Yukon Territory by the high Pacific Coast Ranges, so that the climate is very rigorous. The winters are long and extremely cold, with temperatures ranging down to 70° below zero. The short summers are delightful, and the long summer days are so warm and sunny that vegetation grows with amazing rapidity. Even in this far northern territory the cultivation of the hardier cereals and vegetables has been carried on with considerable success.

Resources.—Although oats, barley, rye, flax, turnips, potatoes, and other vegetables are successfully grown in some parts, the Yukon Territory has too severe a climate to become an agricultural country. It is estimated that there are about 30,000 square miles of land available for agriculture, and this land may possibly be put to use in the far distant future.

The southern part of the Territory is well wooded with timber of fair size, principally white and black spruce. Smaller trees are scattered over the northern half of the Territory, with the exception of a strip along the Arctic coast, where the severity of the climate permits only a few hardy shrubs and plants to survive.

Potatoes, near Dawson, Yukon Territory

The waters of the Territory are well

stocked with fish. Salmon, whitefish, trout, pickerel, and pike are all found, and add materially to the supply of food available within the territory.

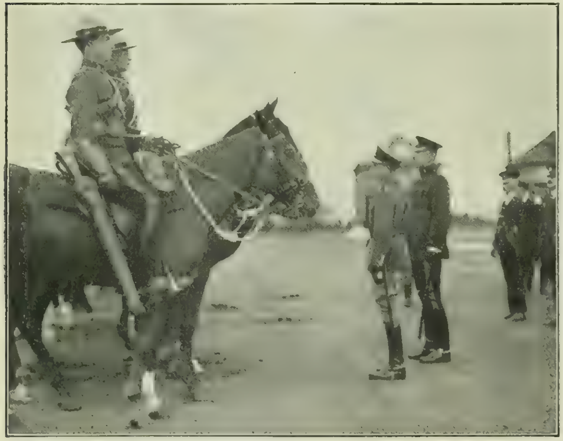
The mineral wealth of the Yukon is very great. In 1896 the richness of the Klondike district in gold became known, and a rush of prospectors followed. Since then gold estimated to be worth over $150,000,000 has been mined. Coal, copper, silver, and other minerals are also mined in considerable quantities, but there is not now so much mining carried on as formerly.

Towns.—*Dawson*, at the junction of the *Yukon* and *Klondike Rivers*, is the capital and chief town of the Territory. It is connected with *Bonanza* by a railway twelve miles long, and with *Whitehorse* by steamer during the summer months. Whitehorse, the terminus of the *White Pass and Yukon Railway*, is the centre of a rich copper-mining district.

View of Whitehorse, Yukon Territory

THE NORTHWEST TERRITORIES

Position, Extent, and People.—That part of Canada extending from the Yukon Territory to Hudson Bay, and from the northern boundaries of Alberta, Saskatchewan, and Manitoba to the islands of the Arctic Ocean, is given the general name of the *Northwest Territories*. For purposes of administration it is divided into three provisional districts—*Mackenzie*, *Franklin*, and *Keewatin*. The boundaries of these districts may be changed at any time by the Dominion Government. The islands in Hudson Bay and James Bay are included in the district of Keewatin. Of the estimated area of the Territories, more than 1,200,000 square miles, much has never been adequately explored.



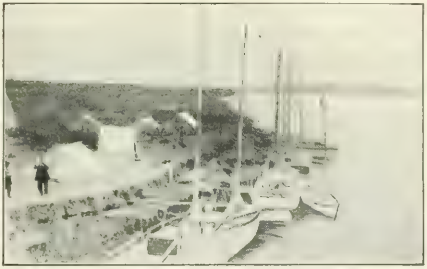
The Prince of Wales inspecting the Royal Canadian Mounted Police

There are only a few people within the Territories, mainly Indians, Eskimos, trappers, and employees of the fur-trading companies, totalling about 8,000 in all. The affairs of the Territories are administered by the Department of the Interior—one of the Departments of the Dominion Government. The Royal Canadian Mounted Police enforce observance of the laws of Canada throughout the whole vast area of the Northwest Territories and the Yukon Territory.

Surface and Climate.—Much of this vast area is a treeless wilderness of rock and swamp, covered with mosses and coarse grass, which provide food for the caribou and the musk-ox. This desolate land lies north-east of a curving line drawn from the mouth of the *Seal River* on Hudson Bay through the middle of *Great Slave* and *Great Bear Lakes* to the mouth of the *Anderson River* on the Arctic Ocean.

To the south and west of the Northern Plain are well-wooded regions. The climate of the Mackenzie Basin is much milder than that of the Northern Plain in the same latitude, which is due partly to the low elevation of the valley lands, partly to the influence of the Chinook winds, and partly to the presence of large bodies of water. Trees a foot in diameter grow in the delta of the Mackenzie, well within the Arctic Circle, while wheat has been successfully grown at *Fort Simpson,* in latitude 62°—a point as far to the north-west of Winnipeg as Winnipeg is from New York.

Resources.—In addition to a certain limited extent of agricultural land along the Mackenzie and Liard Rivers, the Northwest Territories have other resources of great value. Copper is known to occur in vast quantities in the Northern Plain, and these deposits may prove worth developing in the future. It is now known that the basin of the Mackenzie is rich in petroleum, coal, and natural gas, and drilling in the oil-bearing areas has already begun. There is also an enormous supply of pulp-wood, which should also prove a valuable asset in the future development of the country. At present the fur-trade is the chief occupation of the inhabitants of the Territories.



Eskimo Whale-boats, Fort McPherson

NEWFOUNDLAND

Position, Extent, and People.—The island of *Newfoundland* lies at the entrance of the Gulf of St. Lawrence. As a consequence, ships from Great Britain to Montreal and Quebec must pass either through the *Strait of Belle Isle,* which in some places is but twelve miles wide, or through *Cabot Strait,* about sixty-five miles in width, which separates Newfoundland from Cape Breton Island. The former is much the shorter route, but the Strait is frozen for five or six months of the year.

Newfoundland includes not only the island itself, but also about 115,000 square miles of territory along the eastern side of the *Labrador Peninsula.* This district, known as the *Coast of Labrador,* was awarded to Newfoundland by a decision of the Privy Council in 1927. The island proper is triangular in shape, its greatest length being about 325 miles and its greatest width about 310 miles.

Newfoundland has a population of a little more than a quarter of a million, the greater number of whom are of British birth or descent. The country is a self-governing Dominion, forming part of the British Empire.

Surface and Coast-line.—The surface of the island is very irregular. In general, the hills are near the coast. The interior is an undulating country, covered with marshes, lakes, and tracts of barren land. The almost innumerable small lakes take up about a third of the surface of the entire island. The higher hills are covered with forests, but along the streams in the valleys there is a considerable area of arable land. The rivers are small and for the most part not navigable; the largest are the *Humber* and the *River of Exploits.*

The coast-line, which is about 2,000 miles in length, is very irregular. The coast itself is high and rugged, and there are, near the coast, many small, rocky islands. There are a number of excellent harbours.

Climate.—Owing to the Arctic Current which flows along the eastern coast of Newfoundland, the eastern part of the island is cooler than the western section. All over the island the temperature in winter rarely falls below zero, while the summers are quite hot. The meeting of the moist warm air over the Gulf Stream with the colder air above the Arctic Current causes frequent fogs along the south and south-eastern coasts, making navigation dangerous. The rainfall is abundant and extends over the year.

Industries.—About one-fourth of the people of Newfoundland are engaged in the catching and curing of fish. Cod are caught, some in the bays and inlets along the shore and some on the *Grand Bank*. While the latter fishing-ground is open to all nations, the necessary bait is for the most part found within the territorial waters of Newfoundland, that is, within three miles from the coast. The privilege of selling bait to foreigners is jealously guarded by the islanders and is a source of considerable revenue. Salmon, herring, and haddock are also caught on the Grand Bank. A great deal of the cod is dried before being exported. Lobsters are trapped along the shores, and a part of the catch is shipped to the United States, the remainder being canned in factories along the coast. Freshwater fishing is also of importance, the streams of the island teeming with salmon and other fish.

Sealing is the industry next in importance. Each year thousands of seals, which have taken refuge on the ice to bring up their young, are carried along the coast of Labrador and Newfoundland on the ice-fields, or floes, brought down by the Arctic Current. These seals fall an easy prey to the hunters, who set out early in the spring in vessels specially constructed for navigation among the ice. The hunters make their way from floe to floe, slaughtering the seals with clubs and carrying away the skins and blubber. The industry is dangerous, but very profitable. The departure of the sealing fleet, usually about the middle of March, is one of the great events of the year in Newfoundland. Much of the blubber is refined on the island and exported as seal-oil.

The forest wealth of the country, especially of the Coast of Labrador, is enormous in material both for lumber and for pulp-wood. Spruce, fir, tamarack, and birch are the principal trees. There are several large pulp and paper mills on the island, most of the product of which is exported to England. There are many saw-mills on the north coast.

The island is also rich in minerals, so that mining is likely to displace fishing as the leading industry. Iron ore, exported largely to Sydney, Nova Scotia, and coal are the chief mineral products. Vast deposits of gypsum are found on the western coast. Copper, lead, and asbestos are produced in paying quantities. Petroleum has lately been discovered at various points.

The soil of Newfoundland is, in general, cold and wet and not well adapted for farming. However, there are large tracts of fertile land in the river valleys. Oats, barley, and vegetables are the principal crops.

The manufactures, with the exception of lumber, pulp-wood, and paper, are few, and are mainly connected with the fishing industry. The most important are twine, nets, ropes, seal-oil, frozen fish, and canned lobsters.

An Iceberg, off the Coast of Newfoundland

Owing to the irregular and rugged nature of its surface, the island has few railways. The principal places are connected by a railway about 700 miles in length, owned and operated by the government. Communication with Canada, the United States, and Europe is maintained by a number of steamship lines. As the south-eastern part of the island is the point in North America nearest to Europe, it is the landing-place for several of the cables crossing the Atlantic.

Cities and Towns.—~~*St. John's*~~, the capital and largest city, is situated on a beautiful land-locked harbour on the east side of the *Avalon Peninsula.* The harbour is capable of accommodating vessels of the largest tonnage and is provided with a large dry-dock. Many manufacturing plants are located there. *Harbour Grace*, a fishing centre, and *Heart's Content* are thriving places.

The French Islands.—Near the coast of Newfoundland, to the south, are the small island groups of *St. Pierre* and *Miquelon*, which belong to France. The islands have cable communication with Europe and America, and have also regular steamship service with Halifax and Boston. The majority of the people are engaged in the fishing industry. There is little farming.

St. John's, Newfoundland, from the Waterfront.

GREENLAND

Greenland has an area estimated at 850,000 square miles, but less than 50,000 square miles are habitable. On the west it is separated from the northern Canadian islands by *Davis Strait* and *Baffin Bay*, and from Iceland on the east by *Denmark Strait*. The surface is mountainous, but during the ages the valleys have become so filled with ice and snow that the visible surface is almost level. The coast-line is very rugged, with many fiords which run far into the land. Thousands of giant icebergs are broken off each year from the enormous glaciers and drift southward, until they gradually melt away in the warmer waters of the Atlantic.

A Walrus

As the greater part of the island is within the Arctic Circle, the climate is extremely cold in winter. Vegetation is fairly abundant along the coast from June to September. In Greenland there are over 400 flowering plants growing wild, in addition to trees such as the birch, alder, and willow. Potatoes, lettuce, radishes, and other vegetables mature rapidly in the central and southern coast districts during the summer months.

The fox, polar bear, musk-ox, and reindeer roam over the island, and along the coast myriads of birds make their nests. The population consists of about 12,000 Eskimos and probably 300 Danes. The island is a colony of Denmark, and its trade is a government monopoly, maintained in the interests of the natives. There are extensive cod and haddock fisheries on the east coast. The principal products are whale-oil and seal-oil, eider-down, and the skins of the fox, bear, seal, and walrus.

THE UNITED STATES OF AMERICA

Position, Extent, and People.—The *United States of America* extends from Canada on the north to Mexico and the Gulf of Mexico on the south, and from the Atlantic Ocean on the east to the Pacific Ocean on the west. Not including Alaska and other dependencies, it has an area somewhat smaller than that of Canada, but it has a population about twelve times as great.

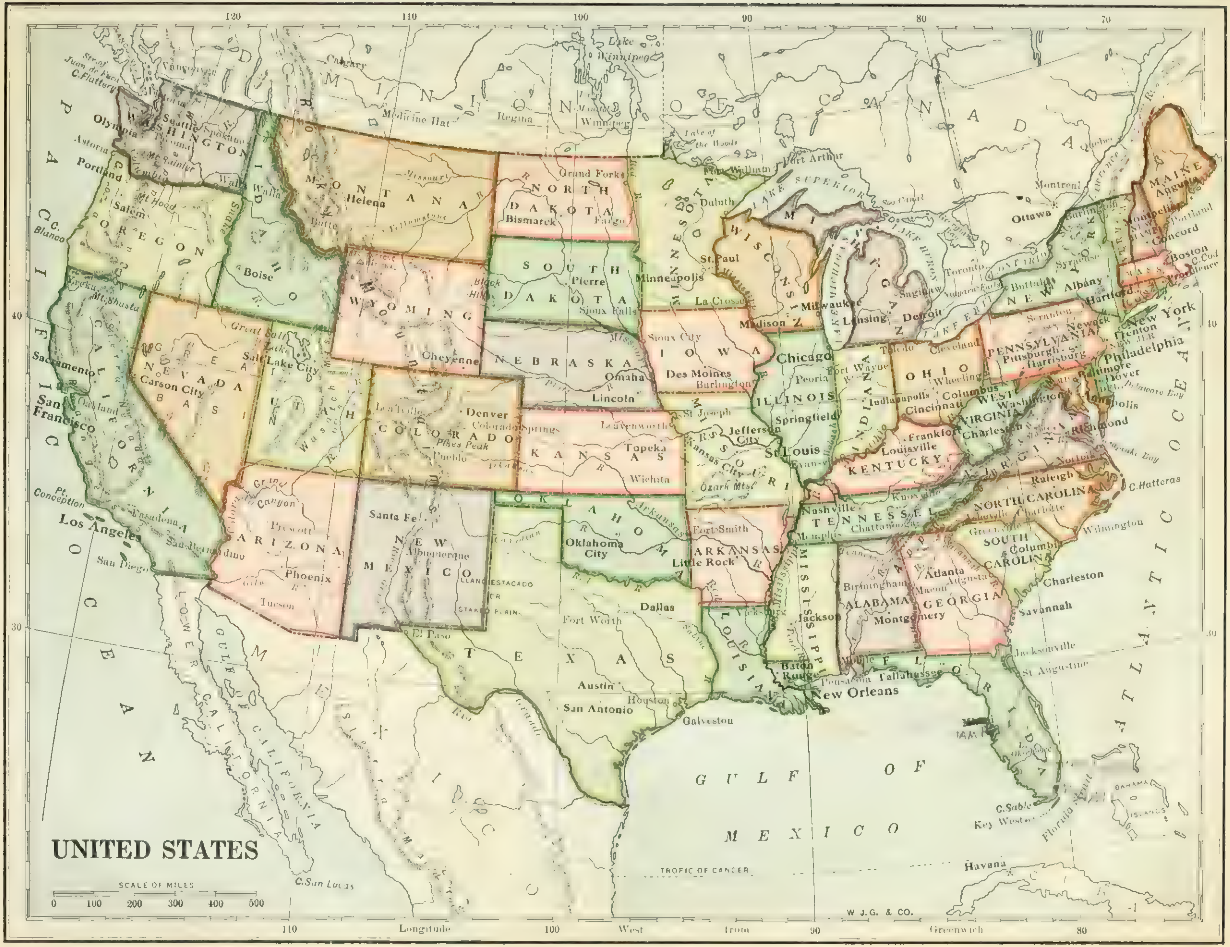
The majority of the people in the United States are of European extraction, with the British element predominating. Germans, French, Spaniards, Italians, Swedes, Norwegians, Poles, Russians, Hungarians, and Jews have emigrated in large numbers to the United States during the last fifty years. The Negroes, who are the descendants of the slaves, form about ten per cent of the population. They live chiefly in the south-eastern states. The Indians, who formerly occupied the whole country, are now mainly confined to reserves and are not increasing very much in numbers.

Dependencies.—The United States has acquired in the last sixty years certain territories beyond its own boundaries. In 1867 *Alaska* was taken over from Russia. Later, the *Hawaiian Islands* voluntarily joined the United States; *Porto Rico* and the *Philippine Islands* were acquired as the result of a war with Spain; and three of the *Virgin Islands* were purchased from Denmark. In 1903 the *Panama Canal Zone* was obtained by purchase from the republic of Panama. The United States possesses also a number of small islands in the Pacific Ocean.

The Capitol, Washington

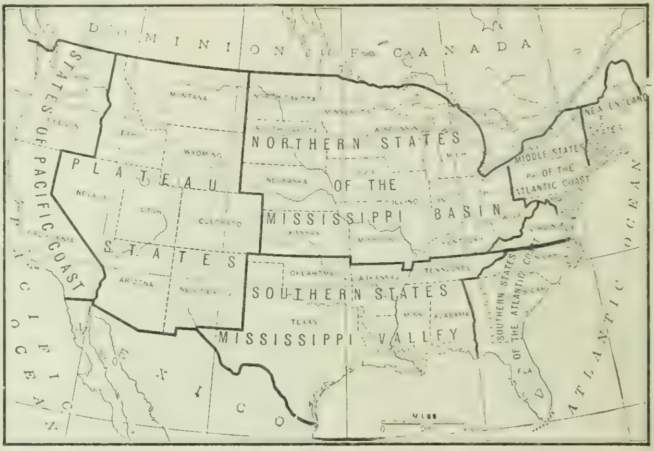
Surface and Divisions.—The general features of the surface of the United States have already been considered. In the east there is the *Atlantic Slope*, narrow in the north, but broadening rapidly toward the south. Back of the Atlantic Slope is the *Appalachian Highland*, steep and abrupt upon its eastern face, but sloping gently toward the *Great Central Plain*. West of the Mississippi River the ground rises gradually to the *Western Highland*, which, with its wide plateaus and basins, occupies about a third of the country. An adequate knowledge of the surface of the United States, however, requires a more detailed study.

The six states occupying the northern part of the Appalachian Highland form a distinct group, known collectively as *New England*. These states are, in general, rough and rocky. Of the mountains the best known are the *Berkshire Hills* in Massachusetts, the *Green Mountains* in Vermont, and the *White Mountains* in New Hampshire. In the north thousands of small lakes dot the surface, but some of them are little more than swamps. The rivers for the most part flow southward. Flowing from the upland, they are short and rapid, with numerous waterfalls; many of them are tidal. The coast-line is very uneven. In some parts it is rocky and rugged, while in others there are long stretches of waste and sand. There are, however, both on the coast and on the numerous small off-shore islands, many safe harbours, which are of great use to the fishermen.



UNITED STATES

The surface of the *Middle States of the Atlantic Coast* consists of four fairly well-defined divisions. Along the sea-coast lies the *Atlantic Coastal Plain.* Rising abruptly from the plain is the *Piedmont Plateau,* the edge of which is called the *Fall Line.* This plateau borders on the *Appalachian Mountains,* which extend in parallel ranges through the Middle States. West of the Appalachians is the *Appalachian Plateau,* sloping toward the Ohio and the Mississippi Rivers.



Map showing the Grouping of the States of the United States

The surface of the Middle States is well drained by many large rivers, the chief being the *Hudson, Delaware, Susquehanna, Potomac, James,* flowing to the Atlantic, and the *Ohio* flowing to the *Mississippi.* There are many lakes, principally in the northern section. *Champlain* is the largest of these. There are along the coast numerous bays, such as *Chesapeake* and *Delaware.*

South of the Middle States are the *Southern States of the Atlantic Coast.* In these states the *Coastal Plain* is much broader and includes all *Florida* and about half of the other three states. It is generally flat, with sand-hills covered with pine forests in the central section. It has also many swamps, the best known of which are the *Everglades* of Southern Florida. These are a tangle of water, mud, roots, underbrush, and small trees. Only the Indians can find their way through their intricate mazes. Back of the plain is the Piedmont Plateau and the Appalachian Highland. The rivers in these states are not important for navigation. The *Savannah* is the chief.

The coast-line is generally low, with sandy beaches and sandy off-shore islands, very dangerous to navigation. South of Florida are a large number of small coral islands, known as *Florida Keys.* The bays along the coast are few, and there are few good harbours. Almost the entire region occupied by the *Southern States of the Mississippi Valley* is a great coastal plain. In some parts, however, there are highlands. The Appalachians extend into *Tennessee* and *Alabama* in a highland known as the *Cumberland Plateau.* Parts of *Oklahoma* and *Arkansas* are occupied by the *Ozark* and other low mountains. The western part of *Texas* is in the Western Highland.

The Mississippi, after it is joined by the Ohio, flows through low-lying lands all the way to the Gulf of Mexico. In order to prevent the river from overflowing its banks, embankments, or *levees,* have been built. Frequently a sudden flood sweeps away the levees, with disastrous consequences to life and property. In the lowlands, on both sides of the river near its mouth, are innumerable small streams known as *bayous,* which form an extensive swamp. The present delta of the Mississippi is of immense extent, forming a large part of the surface of *Louisiana*. The principal tributaries of the Mississippi in this section are the *Arkansas* and the *Red* from the west.

The surface of the *Northern States of the Mississippi Basin* is largely a level plain, sloping gently from the Appalachians on the east to the Mississippi River and rising in an easy slope from the Mississippi westward to the Rocky Mountains. There are highlands, however, in many of the states. The Ozark Mountains occupy the southern part of *Missouri*, while *West Virginia* and part of *Kentucky* lie within the Appalachian Plateau. There are also highlands in *Ohio, Indiana, Wisconsin, Michigan, Minnesota*, and the two *Dakotas*. The greater part of this huge area is drained by the Mississippi River and its two tributaries, the Ohio and the *Missouri*. The rivers of Michigan, however, flow for the most part into the Great Lakes, while parts of North Dakota and Minnesota are drained into Hudson Bay through the Red River.

West of the States of the Mississippi Valley are the *Plateau States*. The great mass of the *Rocky Mountains* runs through these states from north to south. On the west of the Rockies a part of the surface is included in the *Columbia Plateau*, a part in the *Great Basin*, and a part in the *Colorado Plateau*, while the *Sierra Madre Mountains* occupy a portion of the south-western section. On the east of the Rockies part of the surface is included in the *Great Plain*. Almost the entire plateau is a mile above the level of the sea.

The scenery among the mountains is very grand. The government has set aside three great National Parks—the *Grand Canyon of the Colorado*, the *Yellowstone National Park*, and the *Glacier National Park*. The Grand Canyon is one of the wonders of the world. This canyon, through which runs the *Colorado River*, is in many places a mile deep and from two to twelve miles wide. The Yellowstone National Park, most of which is in Wyoming, has much magnificent scenery—canyons, waterfalls, geysers, and hot springs. The colouring of the rocks in the canyon of the *Yellowstone River* is superb. The Glacier National Park in *Montana* has many beautiful mountains, glaciers, and lakes.

Castle Geyser in Eruption, Yellowstone National Park

The *Pacific Coast States* lie along the coast of the Pacific Ocean from Canada to Mexico. The surface of these states is almost everywhere mountainous. The *Coast Range* parallels the Pacific Ocean. East of this is the *Cascade Range* in the north and the *Sierra Nevada* in the south. The Sierra Nevadas are very high mountains and contain *Mount Whitney*, the highest peak in the United States. The Cascade Range is not so high as the Sierra Nevadas, but it is broader and has many noble peaks. Between the Coast Range and the Cascade Range in the north lies the *Willamette Valley*, and between the Sierra Nevadas and the Coast Range in the south is the *Great Valley of Central California*.

The Pacific Coast States are rich in beautiful natural parks, reserved by the government for the benefit of the people. Among these are the famous *Yosemite Valley* in *California*, *Crater Lake* in *Oregon*, and the *Mount Rainier National Park* in *Washington*.

The coast-line from *Puget Sound* to *Southern California* is so regular that, with the exception of *San Francisco Bay*, there are practically no good harbours.

Climate.—In New England and the Northern Middle States the summers are warm and the winters cold. The prevailing winds are from the west, but frequently they change and blow from the east and the north-east, bringing raw and chilly weather. In the southern section of the Middle States it is much warmer, owing partly to the latitude and partly to the absence of cold winds from the ocean. Everywhere the climate is subject to rapid changes. The rainfall over the whole region is abundant.

The climate of the South Atlantic States varies according to latitude and altitude, but it is almost everywhere warm and pleasant. On the coast the climate is influenced both in summer and in winter by the warm winds from the ocean. It is much cooler on the Piedmont Plateau than on the coastal plain, and cooler still on the Appalachian Highland. The winter climate is, on the whole, so delightful that all the South Atlantic States, especially Florida, are thronged with visitors from the north during the winter months.

A Model Orange Orchard, near Tampa, Florida

Along the coast of the Southern Mississippi States the temperature is never extreme, since the heat of summer is moderated by the winds from the Gulf of Mexico. As the distance from the Gulf increases, the summer temperature becomes somewhat higher. In the uplands snow sometimes falls in winter, and ice forms on the small lakes and ponds. The rainfall is abundant, especially in the south. Western Texas and Oklahoma, however, have less rain, as they are not influenced by the winds from the Gulf and are shut off from the winds of the Pacific by the mountains.

In general, the climate of the Northern States of the Mississippi Valley is warm in summer and clear and cold in winter. The rainfall is less in the west and south-west than it is in the south-east, but the prevailing westerlies bring sufficient rain over almost the entire region. In the south-west cyclonic storms are frequent and sometimes do much damage. The waters of the Great Lakes moderate the climate of the states adjacent to them.

The climate of the Plateau States shows many variations. As these stretch from Canada on the north to Mexico on the south, a distance of 1,200 miles, it is obvious that it may be snowing in Montana while it is uncomfortably hot in Arizona or New Mexico. The rainfall is nowhere abundant; in fact, except among the highest mountains, the climate of this vast district is very dry. The rainfall in the *Great Basin* is so small and the evaporation so rapid that the streams from the mountains either disappear or empty into the salt lakes with which the surface of the Basin is dotted. A good example of these salt lakes is *Great Salt Lake* in *Utah*, which has an area of 2,500 square miles.

The climate throughout the Pacific Coast States, except among the high mountains, is never very cold. Generally it is delightful. The rainy season comes during the winter.

The winds from the Pacific Ocean bring an abundance of moisture, heaviest in Washington and Oregon and decreasing toward the south, so that frequently Southern California is very dry. The climate is more equable along the coast than it is farther inland.

Agriculture. — On the whole, New England cannot be considered a good agricultural country. In many districts the soil is thin and poor, while in others it is filled with boulders and small stones. There is, however, some fertile soil, especially in the valleys of the larger rivers and in the Lake Champlain district. The farms are generally small and are devoted to market-gardening, poultry-raising, and dairying. The large cities scattered all through New England easily use all the vegetables, milk, butter, cheese, poultry, and eggs that are produced in their neighbourhood. *Massachusetts* is particularly famed for its onions and cranberries, and the valley of the *Connecticut River* for its tobacco.

Agriculture is of much greater importance in the Middle Atlantic States than it is in New England. The rich soil and the moist climate, together with the early spring and the late autumn, are favourable to farming in all its branches. With the exception of the Appalachian Highland, almost all the land is good. Wheat, oats, barley, and rye are raised, but the farmers have found that these grains can be grown on the western prairies and shipped to the great eastern cities much more cheaply than they can be produced in the Middle Atlantic States. These states are, therefore, turning their attention more and more to fruit-farming, dairying, market-gardening, and poultry-raising. Immense quantities of tobacco are produced in *Virginia*, where the peanut is also a staple crop. As a result of the large quantities of fruits and vegetables grown on the farms, a huge industry in the canning of these products has sprung up. Many farmers dispose of their entire crop to the canning factories.

Most of the people of the South Atlantic States and of the Southern States of the Mississippi Valley are engaged in the cultivation of the soil. Cotton, tobacco, rice, and sugar-cane are the principal products. The islands along the coast of *Georgia* and *South Carolina* yield much "sea-island cotton," the fibres of which are long and very strong. Market-gardening is also a very profitable industry. As the growing season opens much earlier than in the north, these Southern States are able to supply the northern markets with early vegetables and fruits. Florida also produces oranges, lemons, grape-fruit, and pineapples. In the northern sections corn and wheat are grown, particularly in Oklahoma. In western Texas and in Oklahoma the ranching industry is of prime importance. On the great ranches of these two states are raised vast herds of cattle, horses, and mules. Texas is one of the great cattle states of the Union.

Negro Women cutting Sugar-cane, Louisiana

As a general rule, the surface of the Northern Mississippi States is good agricultural land. The soil is rich and deep, and there is a long growing season, with sufficient rainfall and abundance of sunshine. In the western section, however, irrigation is necessary in many parts. *Nebraska*, *Iowa*, *Kansas*, *Missouri*, *Illinois*, *Ohio*, and *Indiana* are the chief corn-growing states. The corn is used for the fattening of cattle and hogs, so that an immense meat-packing industry has grown up in the "corn-belt," as these states are called. Wheat is the big crop in Kansas, Iowa, Nebraska, Indiana, and in the states adjoining the Canadian border. Oats, barley, and rye are raised in large quantities in all the states, while in many parts flax is cultivated for the oil from its seeds. Sugar-beets and potatoes, grown chiefly in Michigan and Wisconsin, celery, apples, and grapes in Michigan, and hay in Ohio, are other important crops. Tobacco is cultivated on a large scale in *Kentucky, West Virginia, Ohio,* and *Wisconsin.* The western section of the Northern States is given over chiefly to ranching. Millions of horses, cattle, and sheep wander over the ranges almost at will.

Sheep, cattle, and horses are raised in immense numbers in the Plateau States. As the grass is everywhere somewhat thin and the water scarce, the herds have to be moved frequently, and large ranges are needed. But while the grass is sufficient for pasturage, there is, in general, not sufficient rain for the growing of crops. Recourse, therefore, has been had to irrigation. Since its introduction, the "Great American Desert," as this district was formerly called, has completely changed. Marvellous results have been achieved. Large crops of sugar-beets, alfalfa, wheat, and other grains are grown, but more attention is paid to the cultivation of small fruits and vegetables.

The Desert, Arizona—Giant Cactus and other Cacti

Agriculture is of the greatest importance in the three states along the Pacific Coast. *Washington* and *Oregon* grow wheat, barley, hops, and sugar-beets, and the rich soil of the valleys yields wonderful crops of apples, plums, strawberries, and small fruits generally. *California* also grows wheat, barley, and sugar-beets, but its most valuable crop is fruit. The sub-tropical climate, the even temperature, and the ample sunshine bring all kinds of fruits, temperate and tropical, to perfection—oranges, lemons, grape-fruit, figs, grapes, apples, plums, pears, apricots, and olives, as well as almonds and walnuts. Fruit-farming is carried on scientifically, assisted by the most modern methods of irrigation. The fruit is carefully packed and shipped, so that it reaches the markets of the world in first-class condition. Side by side with fruit-growing, there is a large industry in the canning of fruit and in the drying of grapes into raisins and of plums into prunes. Stock-raising and dairy-farming are of importance. The butter, milk, and cheese from the farms find a ready sale. There are also large sheep ranches, and poultry-raising is engaging the attention of more and more farmers.

Fishing.—As in Nova Scotia, fishing is one of the principal industries of New England. The irregular coast-line, with its many small, snug harbours, and the proximity of the rich fishing-grounds of the Grand Banks, have favoured the development of the fisheries. Cod, halibut, mackerel, and herring are the principal fish caught. Lobsters are trapped near the shore, while oysters, clams, and scallops are found in abundance in the shallow waters all along the coast. The lakes and streams of *Maine* are filled with excellent fresh-water fish. The canning of lobsters and fish is a flourishing industry.

Fishing is not so important an industry in the Middle Atlantic States as it is in New England. The Grand Banks are too far away, and the fishermen find it more profitable to reap the harvest of shad, bluefish, and mackerel which swarm along the coast. Shad roe is shipped in large quantities, especially to New York. Oysters are plentiful all along the coast, particularly in Chesapeake Bay. The collecting and shipping of oysters is very profitable and gives employment to a large number of people.

Salmon-fishing is one of the great industries of Washington and Oregon, as it is of British Columbia. Connected with the fishing is the canning of the product. Tuna are also caught along the Pacific coast.

Lumbering.—Although New England and the Middle States have been cleared of much of their forest growth, there are still large timber areas. Pine, spruce, and hemlock are the principal soft woods, while white oak, ash, maple, and birch are the chief of the harder woods. Lumbering is carried on in the same way as it is in Canada. Much of the forest product is used in the manufacture of paper. Another important forest product is tannic acid, which is made from the bark of the hemlock and is used in the tanning of leather.

There is much valuable timber in the mountain sections of the Southern Atlantic States. Oak, ash, maple, hickory, walnut, and birch are the principal trees. Georgia pine is much used for floors and interior fittings, while the southern cypress is equally valuable. Stretching from *North Carolina* to Florida is a huge belt of pine forest, from which is obtained nine-tenths of the world's supply of turpentine, tar, and resin. Wood alcohol and tannic acid are also obtained from these pines.

All the Southern Mississippi States, with the exception of Texas, have extensive hardwood forests. Indeed, Louisiana ranks next to the states of Washington and New York in the value of its forest products. In connection with the lumbering industry, the manufacture of furniture, doors, and window-sashes is becoming of great importance.

Lumbering in Michigan, Wisconsin, and Minnesota is a leading industry. Most of the lumber is used for home manufacture. The principal trees are spruce, white pine, cedar, and hemlock. There are large districts in Ohio which are well covered with hardwood, such as maple, birch, and oak.

There are many forest areas among the mountains of the Plateau States. Practically the whole forest region is under very careful supervision. The settlers are allowed a certain amount of wood for fuel, but if they want more they must pay for it. The lumbermen are allowed to cut only such trees as are marked by government inspectors. The trees are principally pine, spruce, and hemlock, although birch and poplar are plentiful.

In the Pacific States lumbering is mainly confined to the immense forests of Washington and Oregon. The forests there are similar to those of British Columbia, and lumbering operations are carried on in much the same way. Washington stands first in the United States in the value of its forest products. In California the enormous redwood trees are prized for their beautiful wood, much in demand for interior decoration. In some districts they are carefully preserved, but in others they are being ruthlessly sacrificed. Some of these trees grow to a height of 300 feet.

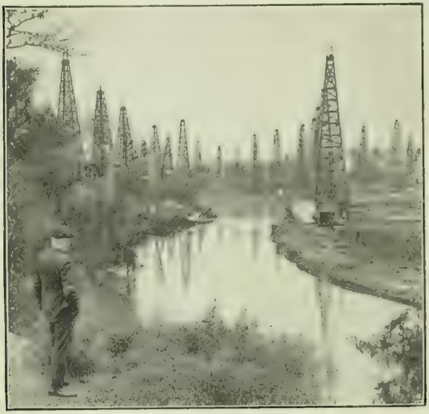
Minerals.—Coal is widely distributed in the United States. With the exception of the New England States, this valuable mineral is found in every section of the country. There are large deposits in Tennessee and Alabama, in Oklahoma, in all the Northern Mississippi States, in all the Plateau States, and in Washington. Most important of all are the rich mines of *Pennsylvania*, which, in addition to a very large output of bituminous coal, produce almost all the anthracite coal that is mined in the world.

Iron, also, is found in many places. There are large deposits close to the coal mines of Pennsylvania, Tennessee, and Alabama. The richest and most productive iron mines, however, are in the states bordering on Lake Superior. This district is the main source of supply for the smelters of Pennsylvania.

In the smelting of iron, limestone and coke are necessary. Large beds of limestone in Pennsylvania, Tennessee, and Alabama, close to the coal and iron mines, have helped these states to become the leading states in iron production in the whole country.

Petroleum is another mineral product of outstanding importance. A few years ago

Pennsylvania was the leading producer of this valuable mineral. At that time the oil-wells of Pennsylvania were "gushers," that is, the oil was so plentiful and the pressure of gas from beneath so powerful that the oil was thrown high above the surface of the ground. Now all the wells have to be pumped. The crude oil is sent through pipe-lines from the wells to the refineries, where it is manufactured into coal-oil, gasoline, benzine, vaseline, paraffin, and many other products. California is now the leading state in the Union in the production of petroleum. Texas, Oklahoma, Louisiana, and all the Northern Mississippi States also are rich in petroleum. Natural gas is also found in the coal and petroleum-bearing areas of the United States, providing a cheap and convenient fuel for local use.

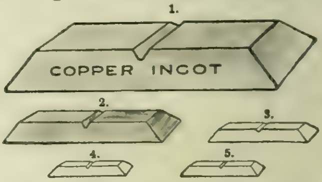


The Goose Creek Oil-field, Texas

Many metals, in addition to iron, are mined in great quantities. Lead ~~and zinc mines~~ are in operation in *Missouri*, and copper mines in the area around Lake Superior. The Plateau States yield gold, silver, copper, and lead. California, in addition to a large output of gold, also possesses valuable deposits of mercury.

Among the other mineral products of the United States may be mentioned salt, produced in large quantities in New York State, Lousiana, Texas, and Utah; building and pottery clays, especially valuable in the Middle Atlantic and Northern Mississippi States; building stone of many varieties; marble, quarried extensively in New England and Colorado; phosphate, found in Florida and South Carolina; mica, mined chiefly in North Carolina; and soda and borax, found in the desert regions of California.

Manufactures.—The magnificent water and electric power available almost everywhere in New England, the proximity to the coal-fields of Pennsylvania, the excellent harbours along the coast, and the numerous railways are the chief reasons for the growth of this region as a great manufacturing district. More than half the people are employed in factories. The principal manufactures are cotton, woollen, and leather goods, silk, furniture, boots and shoes, wood-pulp and paper, hardware and cutlery, watches and jewellery, and dressed granite and marble. So many factories are in operation in the numerous cities and towns of the Middle Atlantic States that even to make a list of the manufactured products would take up many pages. A few only of the more important need be noted, in addition to those already mentioned. One of the most flourishing is the glass industry, which has its centre in Pittsburgh. The success of this industry is due to the presence of large deposits of pure sand and to the abundant supply of natural gas, which affords the best heat for glass-blowing. Cotton, woollen, silk, leather, and boot and shoe factories employ thousands of operators. The factories which produce ready-made clothing, whitewear, shirts, col-



The Five Leading Copper-producing Countries, 1929

Production in Millions of Pounds

1. United States	2,053	3. Canada	242
2. Chile	418	4. Mexico	174
5. Japan	165		

lars, and articles of a similar nature employ tens of thousands more.

The Middle Atlantic States are abundantly supplied with coal, natural gas, and water-power, and all these have made possible the giant strides taken during the last half-century in manufacturing. Water-power is being recognized as of increasing importance. For instance, the power provided by the streams flowing from the *Adirondack Mountains* of New York State, together with the forests which clothe the mountains, have built up there the largest paper-making industry in the United States. Again, the electricity generated from *Niagara Falls* has helped to make Buffalo and other near-by cities great manufacturing centres. There is ample water-power in every state in the Middle Atlantic States.

Picking Cotton, Round Pond, Arkansas

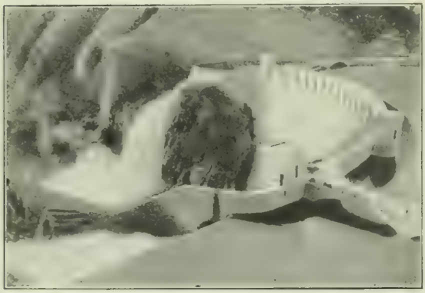
There is no reason why the South Atlantic States should not become great manufacturing centres. Water-power is abundant on the Piedmont Plateau, and these states have the necessary raw material. Until very recently, however, manufacturing was not an important industry there. For many years the planters were accustomed to ship their entire cotton crop to the northern United States and to Europe, but now North Carolina is second only to Massachusetts as a cotton-manufacturing state. There are many factories for the canning of fruit and vegetables and for the manufacture of tobacco.

In addition to the manufacture of iron and steel products, furniture, etc., already mentioned, there are in the Southern Mississippi States many cotton factories and sugar refineries. One industry has recently grown up which promises well for the future of these states. In former years the seeds of the cotton were thrown away as worthless, but now they are saved, and from them is extracted an oil known as cotton-seed oil. This oil is used in the making of oleomargarine butter and soap, and as a substitute for olive oil. The part of the seed that remains after the oil has been extracted is used as cattle fodder.

The meat-packing industry of the Northern Mississippi States has already been referred to as of great importance. Tens of thousands of men are employed in the stockyards and packing-plants in *Chicago, Kansas City, Omaha,* and other cities. Much of the meat is sold fresh, but a great deal is canned for export. Hog fat is used for lard, and cattle fat for the making of oleomargarine. The hides are tanned for leather, the horns and hoofs are used for making glue, the bones for buttons and combs and in the refining of sugar, the hair for upholstery and plaster, and the blood for fertilizer. Even the bristles from the ears of the hogs are used in the making of brushes for children's paint-boxes. Nothing is wasted in the packing-plants.

The other important manufactures of these states can merely be mentioned. These are—agricultural implements to supply the enormous demand of the farming regions close at hand, automobiles, carriages, iron and steel goods, furniture, wood-pulp, flour, ready-made clothing, boots and shoes, gasoline and coal-oil, and textiles of various kinds. This section is second only to the Middle States of the Atlantic in the variety and extent of its manufactures.

In the Plateau States there is plenty of water-power furnished by the mountain streams, but this power has so far not been extensively developed. At present it is used chiefly for the generating of electricity to furnish light and power for the mines and the smelters.



The Roosevelt Dam across Salt River, Arizona

Manufactures in the Pacific States are rapidly increasing, partly on account of the excellent water-power available, partly on account of the opening of the Panama Canal, and partly on account of the development of trade with Asia, South America, the Philippines, and Alaska. The most important are the canning of fruits, vegetables, and salmon, meat-packing, fruit-drying, flour-milling, the making of condensed milk, the refining of sugar and petroleum, the smelting of ores, ship-building, and the manufacture of lumber products, such as furniture, shingles, laths, and fence pickets.

Transportation.—Railway lines cover the United States, running in all directions. Many lines cross the Rocky Mountains, thus connecting the vast eastern territory with the states of the Pacific coast. In fact, the United States has a greater railway mileage than any other country in the world. The Mississippi River, with its tributaries, forms a gigantic system of waterways, which lead almost from the Canadian border on the north to the Gulf of Mexico on the south, and serve the entire region lying between the Rockies on the west and the Appalachians on the east. *Lake Michigan* lies wholly within the territory of the United States. The southern half of the other Great Lakes belongs to that country. Ore from Duluth can thus be carried down the Great Lakes entirely through United States territory to *Cleveland* or Buffalo, and thence by rail to the smelters of Pittsburgh. Waterways, such as the *Erie Barge Canal*, which connects New York with Buffalo, have been a boon to the commerce of the districts through which they pass. In its railways and its waterways the United States has unrivalled advantages for the development of trade within its own borders.

Trade.—The United States, so far as its natural resources and its manufacturing facilities are concerned, is probably the most self-contained nation in the world to-day. When we think of its iron and coal, its wheat and its corn, its fish, its cattle and sheep, its sugar-cane, rice, and cotton, its timber, its oil, and its fruits, we see that within itself the country produces practically everything that is really necessary for its population. If we except rubber, silk, coffee, tea, currants, spices, and products of a similar nature, the United States needs to import very little either in the way of raw material or of manufactured products. With these great resources and a population of over 122,000,000, we can easily see how great must be the interchange of products among the various parts of the country.

The external trade is also very large. Canada is the best customer of the United States, buying many hundreds of millions of dollars' worth of goods annually. Immense shipments, especially of food-stuffs, are sent to Europe. There is also a large trade with South

America, Asia, Australia, and, in fact, with every part of the world.

Cities.—The city of *Washington*, the capital of the United States, is situated on the *Potomac River* in the *District of Columbia*, a small tract of land set aside in 1790 as the location of the capital. It is beautifully laid out and contains the White House, which is the residence of the President, and the Capitol Building, where Congress assembles. Other beautiful and imposing structures are the Library of Congress and the Pension Building.

Situated on a magnificent harbour at the mouth of the *Hudson River* is *New York*. With a population of nearly 7,000,000, it is the financial, commercial, and industrial centre of the United States. Through it passes the greater part of the exports and imports of the country, so that its shipping trade is enormous. Hundreds of thousands of people are employed in various manufactures within the city. Its parks, museums, art galleries, and public buildings are famous all over the world. It is also the art, musical, educational, and publishing centre for the entire country.

The largest and most important city of the Northern States of the Mississippi Basin is *Chicago* on Lake Michigan, the second city of the United States in size. It is especially noted for its stockyards, nearly a square mile in extent, and for its packing-plants. Its situation, close to the corn, coal, iron, and lumber regions, and its excellent rail and water connections have made it one of the greatest manufacturing cities in the world. It has handsome public and educational buildings, museums, art galleries, and beautiful parks and avenues.

At the head of ocean navigation on the *Delaware River* is *Philadelphia*, the third city of the United States. It has excellent railway connections, is close to the iron and steel districts, and has large shipping interests and many manufactures. The city is the chief centre for the manufacture of locomotives.

Boston, the largest and most important city in New England, has a fine harbour, and has the additional advantage of being within easy reach of at least twenty large manufacturing towns. The greater part of the commerce of these towns passes through Boston. The city is noted for its trade in food-stuffs, wool, and leather, and for its extensive shipping interests. It has beautiful parks, fine public buildings, and large educational and charitable institutions. Across the *Charles River* from Boston is *Cambridge*, the seat of Harvard College, one of the oldest universities in the United States. *Providence*, the second city in New England, is situated on the *Providence River*. It has large manufactures and a growing shipping trade. The third city, *Worcester*, near Boston, has large iron and steel and wire works.

Baltimore is situated near the head of Chesapeake Bay on a good harbour. It is an important shipping point and a centre for the trade in canned fruits, vegetables, and oysters. The manufacture of clothing and tobacco, and meat-packing are other industries. Many railways centre in *Pittsburgh*, which is situated at a point where two small rivers join to form the Ohio River. The city has large manufactures of iron and steel goods and plate-glass. *Buffalo*, at the eastern end of Lake Erie, has direct shipping connections with the Upper Lakes and has many large manufactures.

The most important city of the Southern Mississippi States is *New Orleans*, situated about a hundred miles up the Mississippi and easily reached by ocean-going vessels. The ground on which the city is built is below the level of the river, but protection is afforded by high and strong embankments, called *levees*. New Orleans is a great shipping port and has many manufactures.

The large cities of the Northern Mississippi States are numerous. On Lake Superior are *Superior* and *Duluth*, both with excellent harbours and a large shipping trade in grain and ore. *St. Paul* and *Minneapolis* on the Mississippi River are commercial and manufacturing cities, the latter being the leading flour-milling city in the United States. *St. Louis*, on the Mississippi, has a large water trade and many manufactures. *Omaha* and *Kansas City* have large packing-plants and are important railway centres. *Cleveland*, on Lake Erie, is noted for its oil-refining and ship-building and for its lake-carrying trade. The manufacture of automobiles has added much to the prosperity of *Detroit*, the fourth city in size in the Republic. *Cincinnati* is a large commercial and manufacturing centre, as is also *Milwaukee* on Lake Michigan. *Indianapolis* is situated in the midst of the corn-belt. *Louisville*, on the Ohio River, is the largest tobacco market in the world and has many other manufactures.

Steamers along the River Front, New Orleans

The largest and most important city in the Plateau States is *Denver* in Colorado. It is a railway city, with many large smelters. Its situation and climate are so healthful that invalids visit the city in large numbers. *Salt Lake City* in Utah lies in the midst of a fertile district and is the home of the Mormon Church. The Mormon Tabernacle there is a magnificent building.

San Francisco, situated on a peninsula lying between San Francisco Bay and the Pacific Ocean, to which it has access through the *Golden Gate*, is a very busy shipping, commercial, and manufacturing city. It has one of the finest harbours on the continent, and through it passes much of the trade with the Orient. It has also large ship-building yards and many sugar-refineries. In 1906 the city was almost destroyed by an earthquake, but the energy of its inhabitants soon restored it from its ruins. Across the bay from San Francisco is *Berkeley*, the terminus of several railways from across the mountains. *Los Angeles*, with a harbour on the coast, is the fifth city in size in the United States, and is the commercial metropolis of Southern California. It lies in the midst of the oil and fruit districts. *Portland*, on the *Willamette River*, is the commercial and manufacturing centre of Oregon. *Seattle*, situated on a splendid harbour on *Puget Sound*, has had a phenomenal growth. It has a large shipping trade with Alaska and with China and Japan and is the terminus for several transcontinental roads. It has an important ship-building industry, as well as many factories.

The Territory of Alaska.—The peninsula of *Alaska* occupies the north-western corner of North America. Alaska includes the *Aleutian Islands*, which stretch in a long chain over a thousand miles out into the Pacific Ocean. Its area is nearly one and a half times that of Ontario. Its present population is about 60,000, of whom the greater number are Indians and Eskimos.

A Part of the Financial Section, Detroit

The surface of Alaska is very mountainous.

The *Rocky Mountain Highland* grows narrower there and contains several high peaks, such as *Mount McKinley* and *Mount St. Elias.* The *Yukon River*, which has its source in Canada, flows across Alaska and empties into *Bering Sea.* The central and northern district is a broad plateau, for the most part bare of trees, broken occasionally by mountains, and dotted with many lakes and swamps. The climate is much the same as that of the Yukon Territory, except that the warm ocean winds temper that of the coastal regions. Many of the harbours along the coast are free from ice all the year round.

Products.—The greatest wealth of Alaska lies in its minerals. Gold, silver, and copper are the principal, but there is plenty of coal and petroleum. The bays along the coast abound with salmon, which are caught in immense numbers and canned for shipment. Quite an important trade is carried on between Alaska and cities of the Pacific Coast; supplies for the stores and mining camps are shipped in, and millions of dollars' worth of the country's products are exported every year. While there are extensive forests, spreading over an area covering nearly 40,000 square miles and yielding mostly red and yellow cedar and spruce, yet little timber is cut, owing to the many difficulties of transportation and to the rough nature of the country. During the short summer it is possible to raise potatoes and other vegetables. There are many large herds of reindeer in the territory, and on the islands are to be found not only reindeer but also cariboo, otter, seals, and other animals. There, too, a few fishermen make their homes.

A Musk-ox in Captivity

The musk-ox was formerly very common in Northern Canada. It is now not allowed to be killed, as there is danger that the species may disappear.

Towns.—*Nome*, *Juneau*, and *Wrangell* are the principal places on the coast, while *Fairbanks* is an important centre in the interior.

MEXICO

Position, Extent, and People.—*Mexico*, including the peninsulas of *Yucatan* and *Lower California*, lies between the United States on the north and Central America on the south. In area it is about one-fifth as large as Canada, but it has a population almost one-half greater.

A large part of the population of Mexico is made up of the *peons*, or labouring class. The peons are poor, lazy, and ignorant. They are the workers in the mines, in the fields, and on the ranches. They live in houses built of sun-dried bricks, called *adobes*, usually with one room for the whole family. The ruling class in Mexico are the descendants of the original Spanish settlers. The foreign population, who live principally in the cities and in the mining districts, have been attracted by the commercial and mining activities of the country.

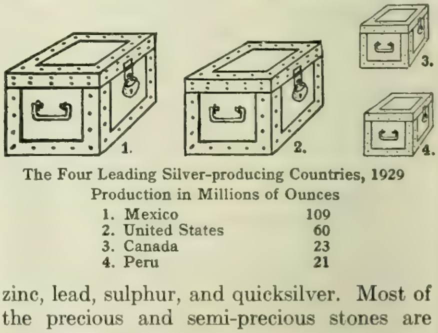
Surface and Coast-line.—The surface of Mexico is divided naturally into four distinct sections. First, there is the coastal plain along the Gulf of Mexico, which in Yucatan widens out until it includes the greater part of the peninsula. Along the Pacific coast there is a similar plain. Rising abruptly from the plain on both the eastern and western sides is a series of rugged mountains, which gradually come together as the country narrows toward the south. Lying between these ranges is a high plateau, which occupies the greater part of the interior. This plateau is varied by low mountain ranges. South of the central plateau is a region of high mountains and lofty, volcanic peaks. The highest of these, *Mount Orizaba* (Star Mountain) and *Mount Popocatepetl* (Smoking Mountain) are covered with snow and ice even during the hottest months of the year. The peninsula of Lower California is mountainous and almost a desert.

A Cactus Fence around a Mexican Home

The rivers, with the exception of the *Rio Grande*, are short, and, owing to their rapid fall from the mountains close to the coast, are of little use for navigation. Dotting the central plateau are thousands of small, shallow lakes, which add much to the beauty of the scenery. The coast-line is regular on both the eastern and western sides, with few bays and only two or three good harbours.

Climate.—The climate of Mexico varies greatly according to the altitude and the distance from the sea. The Mexicans themselves speak of their country as divided into three regions—hot, temperate, and cold. The coastal plain of the *Gulf of Mexico* and the mountain slopes to a height of about 3,000 feet are included in the *hot region*, with hot summers and warm winters. The north-east trade-winds provide plenty of moisture. The climate is tropical, with the trees, swamps, flowers, animals, and birds peculiar to the tropics. The west coast along the Pacific is very hot and dry, while the southern district, lying between the Pacific and the Gulf of Mexico, is not so warm and is much more moist. Included in the *temperate region* are the higher mountain slopes to a height of 6,000 or 7,000 feet, and the greater part of the central plateau. The plateau is shut off from the influence of the trade-winds. Consequently, it is in many places so arid that irrigation must be employed. The *cold region* includes the high mountains towering above and to the south of the plateau.

Industries.—Although the farms of Mexico yield heavy crops of cereals, fruits, cotton, tobacco, and other products, the chief source of the country's wealth is in its mines. Some of the gold and silver mines, still extraordinarily rich, were worked by the Indians before the Spaniards conquered the country. Valuable minerals are found from one end of Mexico to the other. At one place there is a mountain which is a solid mass of iron ore. Productive petroleum wells are in operation on the coastal plain. There are rich mines of copper, zinc, lead, sulphur, and quicksilver. Most of the precious and semi-precious stones are found, such as emeralds, opals, jasper, garnets, topazes, and turquoises. Until recent years the mining methods employed were exceedingly crude, and transportation was difficult, so that the industry did not prosper as it might have done. Now, with the introduction of modern methods and the building of railways, mining has made great strides forward. The mineral products at present



The Four Leading Silver-producing Countries, 1929
Production in Millions of Ounces

1. Mexico	109
2. United States	60
3. Canada	23
4. Peru	21

form almost three-quarters of the total exports of the country.

Manufacturing has not been one of the leading industries of Mexico. For this the ignorance and the laziness of the people are partly responsible, but the main reason is the absence of coal. Of late years, however, water-power has been developed, and more factories are being built. The most important manufactures are cotton, tobacco, earthenware, leather, and iron and steel products. In the homes of the people, rugs, blankets, hats, hammocks, and ornamental leather goods are manufactured, and they find a ready sale, especially to the travelling public.

Cities and Towns.— The city of *Mexico*, the capital and largest city, nestles among the mountains at the southern end of the central plateau. It has many old buildings, dating back to the days of the Spanish occupation, and side by side with these are modern business structures. The cathedral is one of the most beautiful buildings in America. Near at hand on the plateau is *Puebla*, one of the oldest of the Spanish cities and now a manufacturing centre. *Vera Cruz*, owing to the recent deepening of its harbour, has become the chief port on the Gulf of Mexico, and *Tampico* also has a considerable trade, especially in petroleum. *Acapulco*, on the Pacific side, has an excellent harbour and is a coaling-station for vessels.

CENTRAL AMERICA

Position, Extent, and People.—Lying between Mexico and South America, on the narrow neck of land known as *Central America*, are six small republics—*Guatemala, Honduras, Salvador, Nicaragua, Costa Rica,* and *Panama*, and one British colony—*British Honduras.* All these touch upon both the *Pacific Ocean* and the *Caribbean Sea*, with the exception of British Honduras, which lies along the Caribbean. There is, also, the *Panama Canal Zone*, which belongs to the United States. Central America has an area somewhat more than half as great as that of Ontario and a population twice as large.

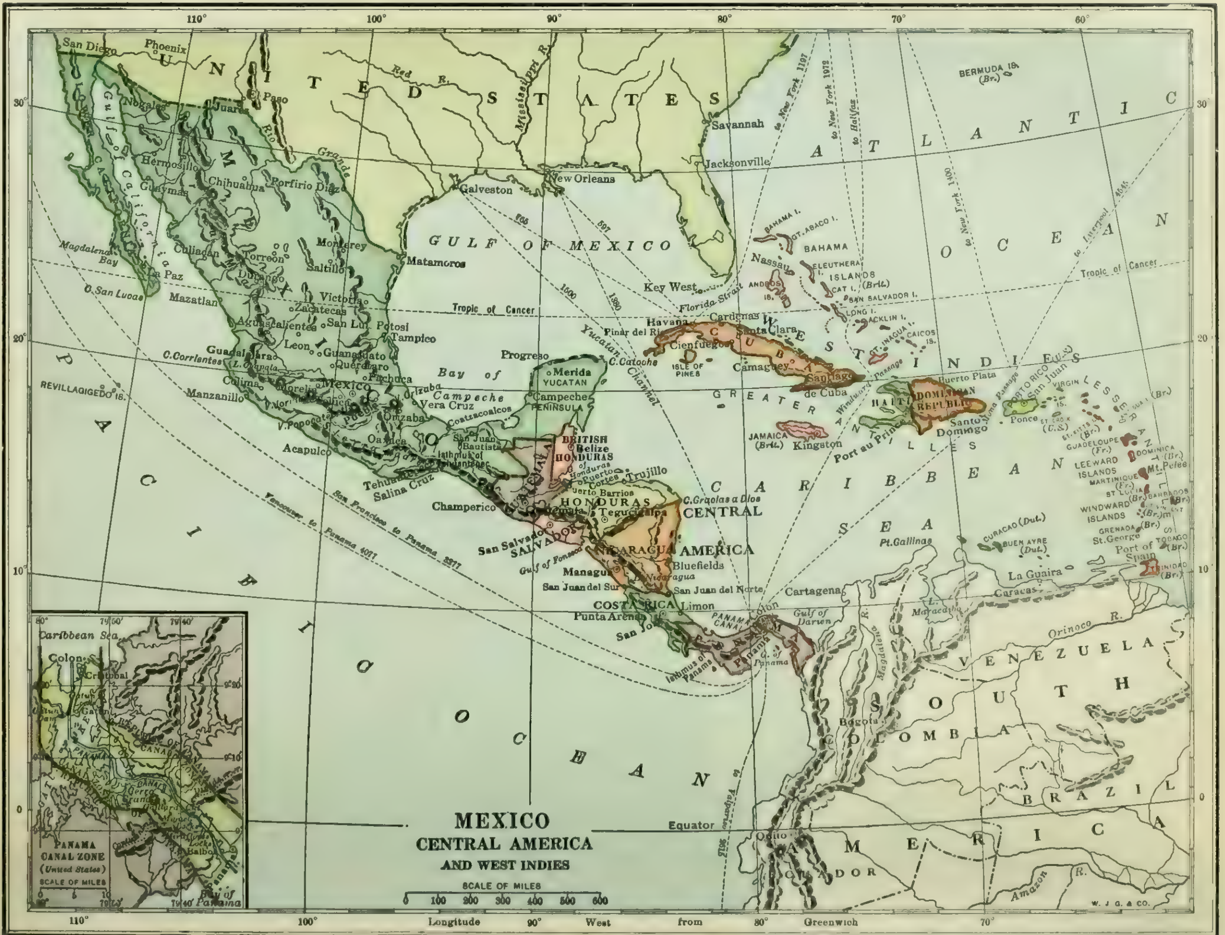
The population of Central America is made up of whites of Spanish descent, Indians, and half-breeds. There are many Negroes. The Spanish language is spoken, and Spanish customs prevail. Progress has been much hindered by the ignorance of the people and by the unstable character of the governments.

Surface and Climate.—The surface of Central America, except in Panama, is extremely mountainous, with the highest elevation near the Pacific coast. On the higher mountains are huge forests of oak and pine. About forty active volcanoes are known, and destructive earthquakes are frequent. Many plateaus and deep valleys are found among the mountains. The coastal plain on the east is low, swampy, and very unhealthy. The country is well watered by many rivers.

As Central America lies between the Tropic of Cancer and the equator, the climate is tropical. The north-east trade-winds blow over the country and bring an abundance of rain, particularly on the east coast.

Industries. — The lowlands of Central America are covered by a dense tropical forest. Mahogany, rosewood, logwood, and rubber trees abound. The cutting of mahogany alone employs thousands of the poorer natives. Bananas, oranges, cocoa-nuts, and other tropical fruits are cultivated and exported in immense quantities. Coffee, sugar-cane, cacao, and tobacco are grown. There are large stretches of pasture land among the mountains, on which cattle, horses, and sheep are raised. Beans, corn, and potatoes are raised mainly for home consumption. Gold and silver are the principal minerals, but the mines are little worked. There is very little manufacturing.

Cities and Towns.—The cities and towns are not large, and there are but few that are worth mentioning. The largest city, *Guatemala*, is in the centre of a rich coffee district. Other important cities are *San Salvador*, *Panama*, *Managua*, and *Tegucigalpa.*



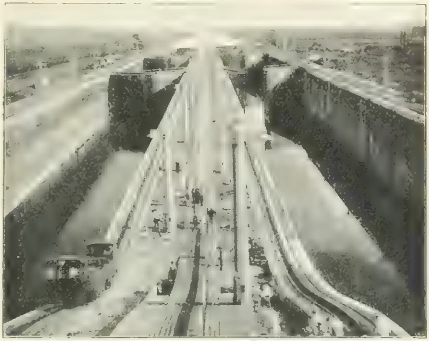
MEXICO
CENTRAL AMERICA
AND WEST INDIES

SCALE OF MILES
0 100 200 300 400 500 600

The Panama Canal Zone.—In 1903 the United States obtained the concession of a narrow zone of land from the Panama Republic, and undertook to dig a canal across the *Isthmus of Panama* at the expense of the government. The first care of the engineers in charge was to make the zone safe for the workmen. The forests with their tangled undergrowths were cleared away, the swamps were drained in order to destroy the disease-carrying mosquitoes, and sanitary devices were installed.

An immense number of workmen were employed, and an enormous amount of material was used. Part of the route of the canal is through *Gatun Lake*, which is eighty-five feet above sea-level. Locks at each side of the lake were, therefore, necessary. At the end of ten years the work was completed, and the canal was opened to the commerce of all nations.

The *Panama Canal* is of great importance to Canada, as it very much shortens the sea-route between Montreal, Quebec, Saint John, and Halifax on the Atlantic, and Victoria, Vancouver, and Prince Rupert on the Pacific. The sea-route to Asia from the eastern coast of Canada is also very much shortened, as is also the distance by sea between the western coast of Canada and Europe.



A Lock in the Panama Canal

Colon, in Panama, at the eastern entrance, and *Balboa*, within the Zone, at the western entrance, are supply and repair stations for ships passing through the canal.

THE WEST INDIES AND BERMUDA

General.—Lying to the east of Mexico and Central America and to the north of South America are several groups of islands, large and small, known as the *West Indies*. The four largest islands—*Cuba, Haiti, Jamaica*, and *Porto Rico*—are frequently called the *Greater Antilles*, while the *Lesser Antilles* include all the smaller islands with the exception of the *Bahamas*. The islands entirely inclose the Caribbean Sea, and with the peninsulas of Florida and Yucatan almost shut in the Gulf of Mexico.

For the most part the West Indies belong to various European powers, but Haiti, which includes the two Negro republics of *Haiti* and the *Dominican Republic*, and Cuba are independent. Jamaica, *Trinidad*, the Bahamas, *Barbados*, the *Leeward Islands*, the *Windward Islands*, and a number of smaller islands are part of our own Empire. Porto Rico and the small islands of *St. Thomas, St. Croix*, and *St. John* belong to the United States. France owns *Guadeloupe* and *Martinique*, and there are some small islands under the rule of the Netherlands.

Surface and Climate.—With the exception of the Bahamas, all the islands are mountainous, although on some of the larger islands there are low coastal plains. There are many coral islands, some raised above the surface and some in process of formation. Many of the mountains are volcanic, but in only a few cases in recent years has there been any activity. The eruption in 1902 of *Mount Pelée* on the island of Martinique was accompanied by great loss of life. In the same year an eruption of the *Soufrière*, a volcano which was supposed to be dormant, laid waste a large part of the island of *St. Vincent*. Five years later, in Jamaica, a violent earthquake caused great destruction both of life and of property.

The climate of the West Indies is tropical. They lie in the path of the north-east trade-winds, so that the north-eastern parts have an abundance of rain, while the western and southern parts are not so well provided with moisture. The rainy season begins about the end of the summer. From July to October the islands are frequently visited by tropical hurricanes, which do much damage and are dreaded by the inhabitants.

A typical Street in a Town in the West Indies
Notice the palm trees on both sides of the street.

Cuba.—*Cuba*, with the *Isle of Pines* and other small islands, has an area of about 44,000 square miles, and a population a little larger than that of Ontario. The people are mainly of Spanish descent, but there are many Negroes and half-breeds. Much of the surface is very mountainous, but there are large coastal plains and an extensive interior lowland. Vegetation is exceedingly luxuriant. The forests contain valuable woods, such as mahogany, ebony, and cedar. The principal crops are sugar-cane, tobacco, coffee, and rice. All the tropical fruits grow in abundance, especially pineapples, bananas, limes, and oranges. Cattle, horses, and mules are raised on the rich grass of the mountain slopes. Sugar and tobacco are the leading manufactures. There is an enormous export trade in cigars, which are packed in boxes made from the native cedar. Copper and iron are mined.

There are many excellent harbours all along the coast, the most important of which is *Havana*, the capital. *Santiago*, on the south side of the island, has also a good harbour.

Porto Rico.—At the close of the Spanish-American War, in 1898, *Porto Rico*, which up to that time had been a colonial possession of Spain, was surrendered to the United States. The population is about 1,550,000, almost four-fifths of whom are white, the remainder being Negroes and half-breeds. Porto Rico is about one and a half times as large as Prince Edward Island.

A range of mountains runs through the island from east to west, but there are large coastal plains. The plantations are mainly on these plains and on the lower mountain slopes. There is little manufacturing, except sugar, cigars, and cigarettes. Oranges, grapefruit, pineapples, and vegetables are largely exported, mainly to the United States. *San Juan*, the capital, is the principal city.

Haiti.—*Haiti* is about 400 miles in length, with a breadth varying from 60 to 150 miles. The surface is mountainous, with long, deep valleys and many lakes. Covering the mountains are dense forests, which supply mahogany, logwood, ebony, and other valuable woods. Coffee and cacao are exported. The mountains are rich in unworked minerals. *Port au Prince* is the chief city of *Haiti*. *Santo Domingo* is the capital of the *Dominican Republic*.

A Coffee-drying Yard, Jamaica

Jamaica.—*Jamaica* is twice as large as Prince Edward Island and has a population of about 975,000. Sixty per cent of the people are Negroes and half-breeds.

Forested mountain ranges, separated by deep, narrow valleys, cover the island. The coast-line is in some parts low, with a gentle slope from the hills; in other parts it is steep and rugged. There are a number of good harbours, including *Kingston,* the capital.

The products are much the same as those of the other West India Islands—sugar, rum, molasses, cacao beans, cocoa-nuts, coffee, bananas, oranges, vegetables, and spices, particularly ginger. Bananas are the chief export. Tobacco and sisal are now being cultivated with advantage to the island.

Loading Asphalt on Cars, Trinidad

Trinidad.—Sixteen miles off the coast of Venezuela lies the island of *Trinidad,* a crown colony of Great Britain. It is less than half the size of Jamaica and contains a population of about 400,000. Of this number about 130,000 are East Indians, who came originally to work on the plantations. The chief products are sugar, cocoa-nuts, cacao beans, rice, coffee, and rubber. Asphalt is obtained from the famous *Pitch Lake.* Petroleum is the only other mineral product of importance. The capital, *Port of Spain,* has a well-protected harbour.

The Bahama Islands.—It was on *San Salvador,* one of the islands of the *Bahamas,* that Christopher Columbus made his first landing in the New World. The group extends in a chain 600 miles in length, from near the coast of Florida to Haiti. About forty of the 700 low, coral islands are inhabited, mostly by Negroes and half-breeds. Although the soil is not very fertile and there are frequent droughts, cotton, oranges, lemons, pineapples, and vegetables are grown for export as well as for home use. Sponges and turtles are obtained in the coast waters, and there are salt-beds on some of the islands.

Many people from Canada and the United States are attracted to the Bahamas each year by the delightful winter climate. *Nassau,* situated on the island of *New Providence,* is the capital.

The Smaller Islands.—The *Lesser Antilles* have the same general characteristics as the larger islands already described. Most of the people are Negroes. The products are mainly tropical fruits, sugar, rum, molasses, tobacco, cotton, dyes, and spices.

The principal islands belonging to Great Britain are the *Leeward Islands,* the *Windward Islands,* and *Barbados.* Barbados is a favourite winter resort for tourists from Canada and the United States. Its capital is *Bridgetown.* The population of all these islands is a little over half a million.

The Bermuda Islands.—The *Bermudas* are a group of about 360 small coral islands, only twenty of which are inhabited. They do not form part of the West Indies. The soil is not very fertile, but it is carefully cultivated all the year round. The principal exports are potatoes, onions, Easter lilies, lily bulbs, bananas, and arrowroot. The islands are used as a naval station by the British Admiralty. *Hamilton* is the capital and leading centre.

The Harbour of Hamilton, Bermuda

The islands may be reached easily from Halifax or New York by steamer, and are, like Barbados, a favourite winter resort for people from Canada and the United States.

SOUTH AMERICA

THE CONTINENT AS A WHOLE

Map Questions.—What ocean is east of South America? West of it? At what cape do they meet? What large sea is between South America and the West Indies? What is the name of the narrow land bridge connecting North and South America? What large island forms the southern tip of South America? What strait separates this island from the mainland? What group of islands is almost due east of the Atlantic entrance to the *Strait of Magellan?*

What is the general shape of both North and South America? Which continent has the more regular coast-line? Where is *Cape St. Roque? Bahia Blanca? The Gulf of Guayaquil?*

How many highlands are there in South America? Name them. Which corresponds to the Rocky Mountain Highland in North America? To the Appalachian Highland? To the Laurentian Highland? Near what ocean is the highest highland of both continents?

In what zone do you live? In what direction from your home is South America? In what zones is South America? What part of South America is in the South Temperate Zone? What part in the Torrid Zone? Which part is the larger?

Find on the map a large river flowing near the equator. In what highland does it rise? In what direction does it flow? Which has the hotter climate, the valley of the *Amazon* or that of the St. Lawrence? Why?

Where is the *Orinoco River?* What highland partly separates the valley of the Orinoco River from that of the Amazon River? Into what ocean do both the Orinoco River and the Amazon River empty?

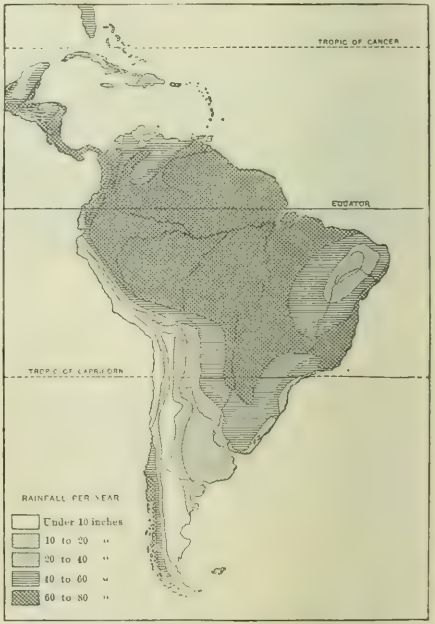
Find the *Plata River.* What large river empties into it? Between what highlands does the *Parana River* flow? Into what ocean does it empty? Why are there no large rivers flowing into the Pacific?

How many countries are there in South America? Name those which front on the Pacific Ocean. What countries have an Atlantic coast-line? What ones front on the *Caribbean Sea?* Name those which are entirely inland countries.

What countries of South America are entirely within the Torrid Zone? What countries are partly in the Torrid and partly in the South Temperate Zone? What is the only country of South America entirely in the South Temperate Zone?

Shape and Size.—*South America,* like its sister continent of North America, is triangular in shape. The northern continent is, however, the larger of the two by over 2,000,000 square miles.

Structure.—Along the whole western side of the continent there is a broad belt of lofty mountain chains, which turns to the east at the far north and ends at the shore of the Caribbean Sea. These are the mighty *Andes Mountains,* the longest continuous mountain range in the world. Many of the peaks tower high above the lower ridges. The loftiest of them are crowned with eternal snow. Some are rough and jagged in outline; others form



Rainfall Map of South America
The rainfall of Central America is included in this map.

regular cones. The latter are volcanic peaks, which have been built up around volcanoes by the lava poured out during eruptions.

In the central and northern part of the Andes the belt of mountainous country is widest. Here are broad plateaus, lying between parallel mountain chains. Farther south the mountains become narrow, and instead of wide table-lands there are several long, narrow valleys which run parallel with the coast.

The Statue of Bolivar, the Liberator of South America, Caracas, Venezuela

Between the mountains and the sea lies a narrow coastal plain along the whole length of the continent, except at the southern extremity, where the mountains rise right from the shore.

South America has other mountains, small, indeed, when compared with the mighty Andes, but still of considerable height and extent. On the north-east coast is a mountainous district, lying between the valleys of the Amazon and Orinoco Rivers. On the north it is separated from the Northern Andes by a wide plain. These mountains are the *Guiana Highlands*. The *Brazilian Highlands* are much more extensive. They stretch from the valley of the Plata River to Cape St. Roque and extend for a long distance inland.

These two areas, with the Andes, form the skeleton of the continent. The rest of it consists, for the most part, of vast, low plains, which cover the whole continent between the mountainous regions.

The Western Coast.—From the *Isthmus of Panama* to the *Gulf of Guayaquil* there is a heavy tropical rainfall over the whole coastal plain and the western mountain slopes. It is greatest in summer, for then all the northern part of the continent is heated to a high degree by the direct rays of the sun and forms an area of low pressure toward which the winds blow from the ocean. Here is a dense tropical forest growing in the rich, moist soil. Bamboos of many varieties abound, and palms are numerous.

Back in the mountains the river valleys have a more temperate climate, since they are high above the level of the sea. In them sugar-cane, bananas, lemons, and oranges grow well. More important still is the cacao tree. This tree grows from fifteen to thirty feet high and looks much like a big lilac bush. It bears a large fruit about the size of a big cucumber, containing about thirty seeds embedded in white pulp. Each seed is about the size of a lima bean and is dark-brown in colour. From these seeds chocolate and cocoa are manufactured. Cacao trees are found almost everywhere in tropical South America, and their cultivation is one of the great industries of the continent.

For almost 2,000 miles south from the Gulf of Guayaquil the coastal plain is a long strip of sandy desert. This part of South America lies in the belt of the south-east trades, which bring abundant rain to the eastern coast of the continent. By the time they have reached the Andes, they have lost much of their moisture, and what is left is condensed as snow upon the lofty mountain peaks. Therefore the land lying to the west of the mountains is parched.

Here and there the long desert strip is broken by rivers, which, fed by the melting snow of the Andes, have sufficient volume of water to force their way across the sand into the Pacific. The valleys of these rivers are extremely fertile. In them can be seen green fields of sugar-cane, looking much like fields of Indian corn, and fields of rice, of tobacco, and of cotton, as well as orchards with almost every variety of tropical fruit.

The desert, apart from the river valleys, is not entirely valueless. Part of it is underlaid by a vast bed of mineral called nitrate of soda. Many men work in the nitrate beds, blasting out the mineral and preparing it for shipment. Much of it is used to make nitric acid, but more is used to fertilize land.

The west coast from about 35° S. to the tip of the continent lies within the belt of the westerlies. It is, therefore, well watered, for the westerly winds yield their moisture when cooled by the wall of the Andes. This rough and rugged coast is heavily timbered with pines. Few people except Indians live in this part of the continent.

The Andes.—The Andes are full of mineral wealth. Gold and silver are abundant in the northern ranges. Tin and copper are also plentiful.

Although several railways have been built from coast towns to the most important mining districts, much of the transport of goods over the mountains is done by llamas. The llama is an odd-looking animal, about four feet six inches in height, with a long neck, a head like that of the camel, and long, slender legs something like those of the deer. It is covered with straight hair, sometimes all white, sometimes blotched with black. The llama can carry a load of one hundred pounds and is as sure-footed as a goat.

Llamas, South America

The Andes are the home of the biggest bird that flies. This is the condor, a huge vulture. The condors soar high over the mountain peaks until they see some animal dead or dying on the ground. They then come down to the feast, for, like all vultures, they are carrion birds and prefer to gorge upon dead carcasses rather than to catch their prey alive.

A Condor, South America

The mountain valleys of the Andes are fertile farm lands. The great plateaus, however, are not so fertile, and some of them are so high and cold that even our hardy northern cereals will not mature upon them. These plateaus are the original home of the potato, which grows wild in many places there. From this region the potato has been taken to all lands and now forms one of the great food crops of the world. The Andean potatoes are quite unlike those we grow in Canada. They are not much larger than walnuts and of such poor appearance that no Canadian farmer could sell them. Yet they are one of the principal articles of diet of the Indians who live on these bleak plateaus.

The eastern slopes of the Andes are covered with forest from the north of the continent down as far as 35° S., where the belt of the trade-winds ends. Two important medicinal plants are found there in profusion. One is the cinchona, from the bark of which is made quinine, so useful a medicine in fever cases. The other is the coca, a shrub about five feet high. From its leaves comes cocaine, which is useful as an anaesthetic.

The Guiana Highlands.—The Guiana Highlands lie in the belt of the north-east trades. When these winds reach the land, they are laden with moisture absorbed during their long journey over the Atlantic. This is condensed over the northern slope of the Guiana Highlands, which have a very heavy rainfall. The southern slope is much drier, although it also receives some rain. The Highlands are little known. Much of them is densely forested, and much consists of wide, grassy plains. The coast lands are very fertile, and sugar-cane, cotton, and coffee are grown there.

The Brazilian Highlands.—The south-east trades sweep over the Brazilian Highlands and water them well. The mountains in this region are not high enough to condense all the moisture from the winds, which, therefore, bring rain to almost the entire breadth of the continent.

The land upon the eastern slopes of these Highlands is a rich, red clay, and the soil and climate are especially well suited to the coffee bush. Here is grown much of the coffee which is used by the people of Europe and America. In its wild state the coffee-bush grows to a height of eighteen feet, but, when cultivated, it is kept pruned to seven or eight feet. It bears a fruit something like a cranberry. The red berries grow in clusters, each berry containing two seeds. These are the coffee beans, so familiar to us all.

Rivers and River Valleys.—There is an extremely heavy rainfall over tropical South America, for the ocean winds, drawn into the heart of the continent by the low pressure area over the hot Amazon valley, penetrate right to the Andes. The whole area drained by the Amazon and its tributaries has an average rainfall of over six feet annually. As you have seen, there is also a heavy rainfall upon both the Guiana and the Brazilian Highlands.

It is obvious that a country with so much rain must have huge rivers to carry back to the sea the enormous quantity of water brought by the winds.

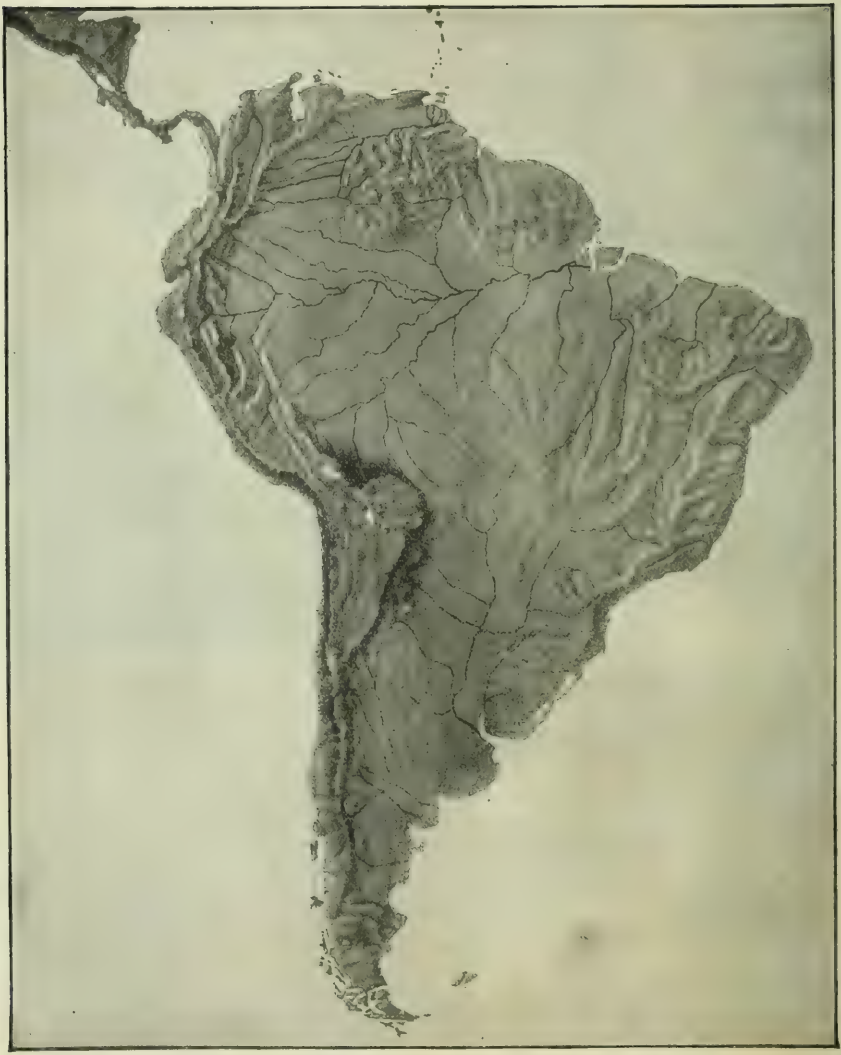
The Orinoco Valley.—The rain which falls upon the northern slopes of the Guiana Highlands and upon the eastern slopes of the Northern Andes runs down in many streams toward the lowland which separates the two mountain districts. These streams unite to form the Orinoco River and its tributaries. The Orinoco itself is navigable for 1,200 miles, and is said to have at least four hundred branches which are navigable for small vessels.

At its mouth the Orinoco forms a large delta, through which the river passes by several channels. The delta is covered with dense tropical jungle. Farther inland its valley broadens out into wide plains, covered with tall, coarse grass. Here great herds of cattle roam, finding abundant pasture on the open plains. These plains are called the *llanos* of the Orinoco.

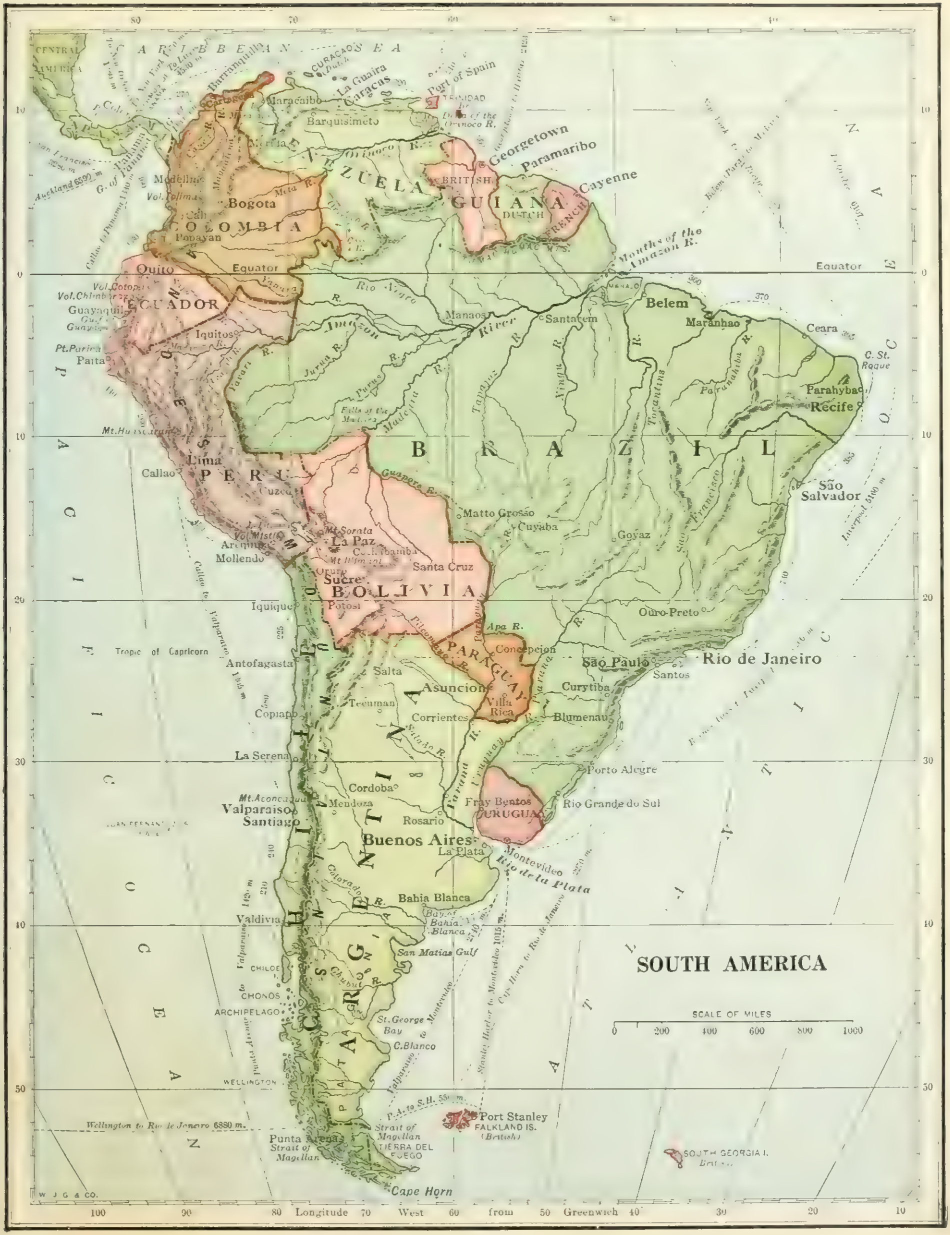
Forest and River, South America

The Amazon Valley.—The rain which falls upon the Andes south of the llanos, and that which falls on the northern slopes of the Brazilian Highlands and upon the southern slopes of the Guiana Highlands, as well as that which falls upon the whole vast plain inclosed by these mountains, all drains into the Amazon River, truly named the "King of Rivers," as it is by far the largest river in the whole world.

In the rainy season the Amazon is like a long inland sea, fifteen to one hundred miles wide. During that season it overflows its banks, and much of the forest for miles inland is flooded, so that only the tree tops



RELIEF MAP OF SOUTH AMERICA


SOUTH AMERICA
SCALE OF MILES
0 200 400 600 800 1000
CARIBBEAN SEA
PACIFIC OCEAN
ATLANTIC OCEAN
CENTRAL AMERICA
G. of Panama
Barranquilla
Cartagena
Curacao (Dutch)
La Guaira
Caracas
Maracaibo
Barquisimeto
Port of Spain
TRINIDAD
Delta of the Orinoco R.
VENEZUELA
Orinoco R.
Georgetown
Paramaribo
Cayenne
BRITISH GUIANA DUTCH FRENCH
Medellin
Vol. Tolima
Bogota
Cali
Popayan
COLOMBIA
Meta R.
Quito
Equator
Vol. Cotopaxi
Vol. Chimborazo
Guayaquil
G. of Guayaquil
ECUADOR
Pt. Parina
Paita
Iquitos
Yapura
Rio Negro
Manaos
Amazon River
Santarem
Mouths of the Amazon R.
MARAJO
Belem
Maranhao
Ceara
C. St. Roque
Parahyba
Recife
Jurua R.
Purus R.
Madeira R.
Falls of the Madeira
Tapajoz R.
Xingu R.
Tocantins
Parnahiba R.
BRAZIL
Mt. Huascaran
Lima
Callao
PERU
Cuzco
Guapore R.
Matto Grosso
Cuyaba
Goyaz
Sao Francisco
São Salvador
Mt. Sorata
La Paz
Cochabamba
Vol. Misti
Arequipa
Mollendo
Oruro
Sucre
Santa Cruz
BOLIVIA
Potosi
Iquique
Ouro Preto
Apa R.
Pilcomayo R.
PARAGUAY
Concepcion
Asuncion
Villa Rica
Paraná R.
São Paulo
Rio de Janeiro
Santos
Curytiba
Blumenau
Tropic of Capricorn
Antofagasta
Salta
Tucuman
Corrientes
Copiapo
Salado R.
La Serena
Uruguay R.
Porto Alegre
Cordoba
Mt. Aconcagua
Mendoza
Valparaiso
Santiago
Rosario
Fray Bentos
URUGUAY
Rio Grande do Sul
JUAN FERNANDEZ IS.
Buenos Aires
La Plata
Montevideo
Rio de la Plata
CHILE
ARGENTINA
Colorado R.
Bahia Blanca
Bay of Bahia Blanca
Valdivia
San Matias Gulf
CHILOE
Chubut R.
CHONOS ARCHIPELAGO
St. George Bay
C. Blanco
PATAGONIA
WELLINGTON
Port Stanley
FALKLAND IS. (British)
SOUTH GEORGIA I. (British)
Wellington to Rio de Janeiro 6880 m.
Punta Arenas
Strait of Magellan
TIERRA DEL FUEGO
Cape Horn
Auckland 6590 m
W. J. G. & CO.
Longitude West from Greenwich
100 90 80 70 60 50 40 30 20 10
0 10 20 30 40 50

stand above the water. Even in the dry season, its breadth is from three to five miles for 2,000 miles back from the Atlantic. Into this great river many tributaries pour their waters and form a navigable net-work of rivers, which covers the greater part of the interior of the continent.

The valley of the Amazon is the most extensive region of dense forest on the face of the earth. The banks of the rivers are lined with tall forest trees, interlaced with creepers so closely that a man can penetrate the forest only by actually chopping a pathway as he goes.

The most important plant of the *selvas*, as these dense forests are called, is the rubber tree. It is a stately forest tree, with whitish gray bark, and with leaves somewhat like those of the ash. The Indians who collect the rubber cut gashes in the bark of the tree and set little tin cups to collect the white, milky sap which drips out from the cuts. When enough is gathered, the Indian builds a fire of palm nuts, which emit a very dense smoke. Then he dips a flat paddle into the sap and holds it in the smoke, turning it so that none of the sticky sap can drip from the paddle. The sap thickens and turns dark-coloured in the smoke. This is repeated until a big lump of rubber has been formed. This is the raw material which is used for so many purposes in our own land.

Much of the Amazon Valley has never been explored, owing to the impenetrable forest with which it is covered. Its inhabitants are, for the most part, tribes of uncivilized Indians.

The Parana Valley.—The rain which falls upon the southern slopes of the Brazilian Highlands and upon the eastern slopes of the Andes south of the Amazon Valley flows into the lowland between these two mountain areas and forms another great river system, of which the two main rivers are the *Parana* and the *Paraguay*. These unite and flow into the great estuary called the *Plata*, which is two hundred miles long and one hundred miles wide at its mouth.

To the west of the Paraguay River lies a great palm forest, broken here and there by long stretches of grass-land. The country east of this river is heavily timbered. In this forest is found the shrub which provides much of South America with its most popular beverage. This is *maté*, or Paraguay tea. It is made from the young, tender leaves of the maté bushes. It is a bitter drink, but very stimulating.

The Pampas.—Toward the mouth of the Parana River the forests gradually become less dense, until the plain becomes a treeless grass-land. These plains are called the *pampas*. It is a country of great estates, where land is sold, not by the acre, but by the square league, a block containing about 6,000 acres. Here are great herds of cattle and enormous flocks of sheep. Horses are so plentiful that many are slaughtered just for their hides. The better-watered sections of the pampas make fertile farms, and much wheat is grown on them.

Patagonia.—The pampas cover the eastern lowland from the Parana River to Bahia Blanca. South of this we come again into the belt of the westerlies, which cannot bring rain over the Andes to the eastern plain. Therefore this district, known as *Patagonia*, is almost a desert. Here and there are thorn bushes, and in some places there is scanty grass. There are scattered sheep farms along the coast.

Animals.—The rivers of South America swarm with life. There are numberless alligators, and many varieties of fish, some of which are huge creatures ten feet long. The Indians eat the tails of young alligators, and travellers who have tasted this dish speak well of it. Turtles are extremely abundant, and many of them are very large. Their flesh is good to eat. The Indians use as food their eggs also, and prepare an oil from them for cooking and for fuel.

The forests are full of snakes, many of them poisonous. The largest snake found in South America is the anaconda, which, like the python, crushes its prey to death.

The jaguar and the puma are beasts of prey which correspond to the tiger and the lion of the Old World. They are, however, not quite so large and fierce. They seldom molest man, but they often attack the flocks and herds of the ranchers.

The tapir is peculiar to South America. It is an animal of about the size of a pony, with a head shaped much like a pig's, but with a much longer upper lip. It is very timid and hard to shoot.

More dangerous are the herds of little wild pigs called peccaries. These beasts are very ferocious, and a drove of them is more dangerous to meet than either a jaguar or a puma.

A Tapir, Brazil

In the grass-lands to the west of the Paraguay River are herds of antelopes and deer, which are hunted by the uncivilized Indians who still live in this region. Here, too, are many armadillos, curious burrowing animals found in many parts of South America. The armadillo has a shell like a turtle. The flesh is considered dainty food by the natives.

South America is rich in bird life. There are many varieties of parrots of bright colours. The toucan is a brilliant bird of red and blue, with a heavy hooked bill. Vultures are common everywhere. The Guiana Highlands are noted for their humming birds, which flash from flower to flower like living jewels of topaz, ruby, or emerald.

Over the pampas roam flocks of rheas, birds very like the ostrich, but without plumes. The natives of Argentina hunt the rhea on horseback with the "bolas," a thong of leather eight feet in length with a weight at each end. As soon as the hunter is near enough, he throws the bolas, which winds itself around the legs of the bird and brings it to the ground. So much is the rhea esteemed by the natives as food that, like our buffalo, it is in danger of becoming extinct.

People.—The original population of South America was, of course, Indian. Soon after the discovery of America, the Spaniards conquered the west coast and the southern part of the continent, and the Portuguese formed settlements on the east coast. Then the Portuguese brought over many Negroes from Africa to work in their plantations. To-day many of the coast population are descendants of the Spaniards and the Portuguese who intermarried with the Indians. There are also pure-blooded Indians and Negroes and people of mixed Indian and Negro blood. In addition, there are many Europeans of various races, who have gone to South America to settle. In the interior there are few people yet, except Indians.

BRAZIL

Position, Extent, and People.—*Brazil*, occupying more than one-half of the continent, is the largest of the South American countries. It has an area as great as that of Canada without the provinces of Saskatchewan and Alberta, and almost as great as that of the whole of Europe. It has, however, only about twelve inhabitants to the square mile. The people for the most part live near the coast, and large sections of the interior are almost uninhabited. There is a numerous Indian and Negro population. The whites are mainly of Portuguese descent, but there are large German and Italian settlements.

Surface and Climate.—The northern section of Brazil, an immense plain, lies wholly within the basin of the *Amazon River*. The southern section is rolling land, with huge patches of forest. This area is drained through the *Parana*, *Paraguay*, and other rivers, into the *Plata*. From the highlands of the east, numerous rivers flow into the Atlantic Ocean. The largest of these is the *São Francisco.* The rivers are of supreme importance to Brazil, as on them depends almost entirely communication with the interior. Except in the coffee districts of the east, there are but few railways.

As the country lies almost wholly within the tropics, the climate is hot and moist, with a very heavy rainfall. In the extreme south the temperature is lower, and there is less rainfall. Local conditions, also, modify the climate. For instance, the interior of the Brazilian Highland, on account of being shut off from the Atlantic by the higher hills near the coast, has a very light rainfall, and irrigation is necessary in order to grow crops.

Products and Industries.—The country is amazingly rich in natural resources. Of the forest products, rubber is the most important. Many varieties of valuable woods, such as mahogany, rosewood, and ebony, are found throughout the forests. The vanilla, from which flavouring extracts and perfumes are made; the cacao, which yields the cocoa and chocolate of commerce; the manioc, the root of which, when ground, makes tapioca, and also farina, one of the staple articles of food of the people; and the Brazil-nut, are other valuable products obtained from the forest.

The Entrance to the Bay of Rio de Janeiro, Brazil

Cotton, sugar, tobacco, rice, tropical fruits, and coffee are the chief agricultural products. Four-fifths of the coffee used in the world comes from the highlands north of Rio de Janeiro, where both the soil and the climate are favourable to its production. Many of the plantations have over a million coffee trees. Cattle are raised on the plains in the extreme northern and southern sections.

The most important mineral products are gold, iron, and diamonds. Iron, however, is little mined, on account of the difficulties of transportation. Since the discovery of diamonds in South Africa, the diamond fields of Brazil are not so important as they were formerly.

Manufacturing is not yet a leading industry, although in recent years European settlers have established cotton and woollen factories and flour-mills.

Cities and Towns.—*Rio de Janeiro*, the capital, has a magnificent harbour. With over 1,720,000 people, it is the second city of South America. It is very beautiful, and it lies in the midst of fine agricultural lands and coffee plantations. *São Paulo*, the second city in numbers, in the midst of the coffee district, and its seaport, *Santos*, are busy centres. *Recife* and *São Salvador*, on the Atlantic coast, are prosperous places, through which passes a large part of the commerce of Brazil. *Manaos*, almost a thousand miles up the Amazon, and *Belem*, at the mouth of the river, are important rubber ports.

ARGENTINA

Position, Extent, and People.—The republic of *Argentina* extends from north of the Tropic of Capricorn to the extreme south of the continent. It is in area about one-third the size of Brazil and has about one-quarter as many inhabitants. The people are mainly of Spanish descent, but there are many Indians, French, Welsh, Germans, and Italians. Its position, lying as it does almost wholly within the S Temperate Zone, is favourable to the development of an energetic and progressive people.

Surface and Climate.—Argentina is a great plain, sloping from the *Andes Mountains* to the basin of the *Plata River* and its tributaries and toward the Atlantic Ocean. In the north-western section there are dense tropical forests. In the south, are the dry and desolate plains of *Patagonia*. Between Patagonia and the tropical forest are the *pampas*, or prairie lands. In the east the pampas are well watered, but toward the mountains the rainfall is less. There the country is better suited to cattle-raising than to the growing of grain.

Industries.—Since such a large part of Argentina is grass-land, cattle and sheep ranching is the chief industry of the people. The country stands fourth in the world in the number of its sheep. But the grain-growers are displacing the ranchers, and comparatively small farms are becoming numerous. At present the methods of farming are poor, but in spite of this, immense quantities of wheat, corn, and flax-seed are produced. Frozen mutton and beef from the great refrigerating plants are sent to Europe, as well as sheep and cattle "on the hoof." Hides, tallow, horns, dried beef, and butter are important articles of commerce. A large part of the world's supply of wool comes from Argentina. Cotton, sugar-cane, and grapes are grown in the tropical districts of the north. In some of the interior cities there are factories for the manufacture of flax-seed oil.

The manufacturing industries are for the most part connected with grain-growing, cattle-raising, and grape production. There is very little iron and coal, so that it is doubtful if manufacturing will ever become a leading industry. Along the base of the Andes there is some mining, but the output is not large. Gold, silver, copper, and lead are found.

Lumbering in the forests of the northern and north-western parts of the country is becoming of great importance. In these districts is found the quebracho tree, the wood of which is so heavy that it will not float. Both the wood and the bark yield a valuable tanning material, much in demand among the leather manufacturers of Europe.

The rivers are of great aid to internal trade. The *Parana*, which flows through the richest agricultural districts, is navigable for 1900 miles. The railways are not numerous when the extent of the country is taken into consideration, but they tap all the leading centres.

Cities.—*Buenos Aires*, on the south bank of the estuary of the Plata, is the capital. It is the largest city of South America, with a population of over two millions. The city is very beautiful and is the centre of the business life of the country. The harbour, however, is poor. It requires constant dredging and the construction of docks stretching far out into the estuary. *Rosario*, on the Parana River, is the second city of Argentina. It is a wheat and cattle shipping centre, with many refrigerating plants. *Mendoza*, in the wine district, *Corboda*, in the flax-raising area, and *Tecuman*, in the sugar-producing section, are other important cities. *Bahia Blanca*, on the coast, is a wool and wheat shipping port, as well as a railway centre.

URUGUAY

Surface, Climate, and Products. — The surface of *Uruguay* resembles that of the pampas of Argentina, but is more rolling and is varied by wide stretches of wooded land. The climate is moist and healthful. Cattle-raising and sheep-raising are the principal industries. Grain-growing, however, is rapidly increasing. Much wheat is raised, as well as tobacco, cotton, and fruits. Large quantities of wool are shipped to Europe. The chief exports are frozen beef, beef extracts, hides, tallow, and cattle horns.

Cities.—*Montevideo*, the capital, is a very attractive city on the estuary of the Plata. About one-quarter of the population of

Uruguay live there. The harbour is magnificent. *Fray Bentos*, near the border of Argentina, is famous for its beef extract.

PARAGUAY

Surface, Climate, and Products.—*Paraguay* is one of the two South American states without a sea-coast. It is divided into two parts—Paraguay proper and the Paraguay Chaco. The *Chaco* is inhabited only by Indians and wild beasts. It has been but little explored. Even in Paraguay proper—the settled part of the country—there are but few people. It is a rolling country, with one or two low mountain ranges covered with forests. There are numerous streams upon which the products of the country can be carried. The *Paraguay* and *Parana Rivers* give access to the sea.

In climate and products Paraguay is semi-tropical. It has small plantations of tobacco, manioc, cotton, rice, fruits, and sugar-cane, but its chief products are Paraguay tea and oranges. Stock-raising is the principal industry of the country. The quebracho tree is abundant in the Chaco. Hides, beef products, tobacco, and oranges are exported. Lace-making is carried on in the homes of the people.

Cities.—*Asuncion*, the capital, is situated on the Paraguay River, and is connected both by rail and by water with Buenos Aires.

CHILE

Position, Extent, and People.—*Chile* lies on the west slope of the Andes Mountains. Its eastern boundary is the watershed between the rivers that flow into the Atlantic and those that flow into the Pacific. Because of the nearness of the mountains to the sea, it is very narrow, but it is about 2,500 miles in length. It includes many islands along the coast and the land on both sides of the *Strait of Magellan*. The area of Chile is about three-quarters of that of Ontario, with a population about one-third larger.

Chile is one of the most progressive countries of South America. It has the honour of having built the first railway in the southern continent. The ruling class are chiefly of Spanish descent, but there is a very large native population. There has, however, been very little intermarriage in Chile between the Spaniards and the Indians.

Surface, Climate, and Products.—Because of its length and the altitude of its mountains, the country has a wide range of climate and of products.

The northern section of Chile is almost entirely a desert. In some places, however, agriculture may be carried on with the aid of irrigation. In this region are the valuable beds of nitrate of soda which are the chief source of revenue of the country.

Most of the fertile area in Chile is in the central part of the country. Here there is a long valley between the Andes proper and a low mountain range near the coast. In it wheat, corn, barley, and beans are raised, and also tobacco, fruits, especially grapes, and vegetables. In the southern section there are many sheep and cattle ranches, with a large trade in wool, hides, and leather.

Discharging Nitrate into Storage Bins, Chile

Mining, however, is the chief industry. Copper, nitrate of soda, and borax are exported in large quantities. Gold, silver, and coal are other important minerals.

There is almost unlimited timber wealth, but so far it has been but little developed. Manufactures, too, are in their infancy. Of these, flour, wine, cheese, and leather goods are the principal. On the islands off the coast, guano—bird-manure much used as a fertilizer—is dug up and exported both to Europe and to the United States.

Cities.—*Santiago*, the capital and chief city, lies in the interior agricultural valley. Its seaport is *Valparaiso*, 115 miles distant. *Iquique* is the centre of the trade in nitrate of soda. *Punta Arenas*, on the Strait of Magellan, is the chief town of that sparsely populated region and is a port of call for vessels.

PERU

Position, Extent, and People.—*Peru* is one and a quarter times the size of Ontario, but has more than double the population. Most of the inhabitants of Peru are Indians and half-breeds. Only about 750,000 are of pure Spanish descent.

Surface and Climate.—The surface consists of a narrow strip of land along the sea-coast, of a mountainous region with many fertile table-lands and valleys, and of the eastern slope of the Andes, with a part of the basin of the upper Amazon.

Peru lies entirely within the tropics, but the country is so mountainous that almost all varieties of climate are found. There is plenty of rain in the northern section and on the eastern side of the Andes, but southern Peru is almost a desert, with a fall of rain only once in six or seven years.

Products and Industries.—In the valleys and table-lands among the mountains, the common grains and vegetables of the Temperate Zone are all grown. In the warmer districts, cotton, tobacco, rice, sugar-cane, cacao, and coffee grow luxuriantly. Cattle and sheep are raised, the latter principally for their wool. Wool is also obtained from the large herds of llamas, alpacas, and vicuñas. In this there is a large export trade. The forests furnish rubber, cinchona bark, and coca. Peru, like Chile, has on its coastal islands enormous deposits of guano, most of which is retained for local use.

It was the rich mines of Peru that first attracted the Spaniards to that country. These mines are still being operated and are still yielding their wealth. In addition to copper and silver, gold and coal are found. Peru is now the chief source of the world's supply of vanadium, a metal used for lightening and toughening steel. The mines, however, are difficult of approach, and the comparative lack of railways has proved a hindrance not only to the development of the mineral wealth but also to manufacturing.

The Water Front, Callao, Peru

The oil-fields in the northern section of Peru are very extensive; in fact, oil is now one of the leading exports of the country.

Cities.—At the western base of the Andes is *Lima*, the capital of Peru. On the coast, eight miles distant, is *Callao*, its seaport. Other important centres are *Arequipa* and *Cuzco*, both high up among the mountains.

BOLIVIA

Position, Surface, Climate, and People.—*Bolivia* is entirely an inland country. Except in the northern and eastern parts, which lie within the basin of the Amazon, the surface is mountainous, with deep valleys between the ranges. Much of the country, covered with dense forests, is as yet unexplored. The climate, except when tempered by the altitude, is tropical. The population very much resembles that of Peru.

Industries.—The most important industry is mining. Gold, silver, copper, and tin are found in immense quantities; indeed, Bolivia is the second tin-producing country in the world. The methods of mining, however, are so crude, and transportation is so difficult, that comparatively little ore is taken from the mines. From many of the mines the ore is carried on the backs of llamas. Three railways now reach the Pacific coast from the interior, and others are under construction. Both the Amazon and Parana-Plata River systems touch Bolivia, so that there is communication by steamer with the Atlantic Ocean on the east.

The products of the farms in the valleys among the mountains are similar to those of Peru. Rubber is produced in the north and east, while the wool of the llama is a valuable article of export. There is but little manufacturing.

Cities.—*Sucre* is the legal capital, but *La Paz* is the seat of government. Other cities are *Potosi* and *Cochabamba.*

ECUADOR

Position, Surface, Climate, and People.—*Ecuador*, so called because it is crossed by the equator, is a very mountainous country. Two active volcanoes—*Chimborazo* and *Cotopaxi*—are in Ecuador. Earthquakes are very common and sometimes do much damage. The climate in the lowlands is tropical. Among the mountains and along the base of the hills, where most of the people live, the climate is much more pleasant. There are but few railways and practically no roads. This lack of transportation has greatly hindered the progress of the country. More than two-thirds of the population are Indians.

Products.—The country is exceedingly rich in minerals, but very little mining is done, except in some of the richer goldfields. Cacao, coffee, cotton, tobacco, and sugar-cane, as well as the cereals of the Temperate Zone, are cultivated. There is almost an entire absence of manufacturing, with the exception of Panama hats and cocoa.

Cities.—*Quito*, the capital, is situated among the mountains, but it is connected by railway with *Guayaquil*, its seaport. Both are large and flourishing cities.

COLOMBIA

Position, Surface, and Products.—*Colombia* touches upon both the Pacific Ocean and the Caribbean Sea. Three ranges of the Andes cross the country, forming valleys through which flow the *Magdalena* and *Cauca Rivers.* The eastern section of the country drains into the *Orinoco* and *Amazon Rivers*. There are the treeless plains known as *llanos*, on which large numbers of cattle are raised. Sugar-cane, tropical fruits, rice, coffee, tobacco, and cacao are grown in the valleys, while on the highlands the grains, fruits, and vegetables of a more temperate climate are cultivated. Mining is important, platinum, gold, silver, and oil being the principal minerals. Salt is mined for local use.

Mule Train arriving at a Coffee Warehouse, Colombia

Cities.—*Bogota*, in the midst of a rich agricultural country among the mountains, is the capital. It is a modern city and enjoys a delightful climate. Its port is *Barranquilla*, near the mouth of the *Magdalena River*. *Cartagena*, owing to the filling up of its harbour with silt, has lost much of its former importance as a seaport.

VENEZUELA

Position, Surface, and Products.—*Venezuela* is made up largely of the basin of the *Orinoco River*, although there are mountain ranges in the south and in the north-west. About one-half of the country is covered by a dense forest. The agricultural products of Venezuela are much like those of Colombia. From the forests are obtained rubber and many valuable dyewoods. The more important minerals are found among the mountains, as are also large beds of asphalt and extensive oil-fields.

Ploughing in the Central Andes

Cities.—*Caracas*, the capital, is about six miles from the sea, on a high plateau. It is connected with its seaport, *La Guaira*, by railway. *Maracaibo* is another important seaport, with a large foreign trade.

THE GUIANAS

Surface.—The only parts of the mainland of South America now under the control of any European nation are the three *Guianas*—*British Guiana, Dutch Guiana*, and *French Guiana*. The surface rises from the low coast-line in a series of terraces to the grassy savannas of the interior. Behind the savannas are mountain ranges and dense forests filled with tropical birds and animals and inhabited by Indians. The longest river is the *Essequibo*, which enters the sea after a course of 600 miles.

Products.—The principal products are raw sugar, cotton, rice, tropical fruits, cacao beans, and coffee. There are very few roads and only one short railway. In French Guiana there is a large penal settlement for criminals from France, which now numbers over 4,000 men. There are many East Indians working on the plantations in British Guiana.

Cities.–*Georgetown* is the capital of British Guiana, *Paramaribo* of Dutch Guiana, and *Cayenne* of French Guiana.

THE ISLANDS OF SOUTH AMERICA

The Falkland Islands.—Three hundred miles east of the Strait of Magellan are the *Falkland Islands*. The group, which consists of two large and about one hundred small islands, belongs to Great Britain. They are important as a whaling-station and as a port of call and repair station for vessels passing south of *Cape Horn* on their way to and from the East. The islands are bleak and desolate, especially in winter, without trees and with many swamps, but covered with natural pasture. Cattle and sheep are raised, but most of the food as well as fuel for the 2,300 inhabitants has to be imported. The islands are a centre for the whaling industry. Owing to the rough water very little fishing is carried on. *Port Stanley* is the chief town. East of the Falkland Islands is the island of *South Georgia*, which also belongs to Great Britain.

Tierra del Fuego.—The archipelago of *Tierra del Fuego* lies at the extreme south of the continent. It belongs partly to Chile and partly to Argentina. There is much forest land and some grass-land, but the few thousand inhabitants have by no means an easy life.

Juan Fernandez.—West of Chile lies the island of *Juan Fernandez*, where Alexander Selkirk is supposed to have been wrecked. It was his adventures that suggested to Daniel Defoe the character of *Robinson Crusoe*. The island belongs to Chile. It is of little commercial importance.

Colon Archipelago.—The *Colon Archipelago*, formerly known as the *Galapagos Islands*, about 600 miles west of the Ecuador coast, belongs to that country. The islands, fifteen in number, are volcanic in their origin. They are frequented by giant turtles, with shells sometimes two feet in length.

EUROPE 157

THE CONTINENT AS A WHOLE

Map Questions.—What ocean is north of Europe? What ocean separates Europe from North America? What sea separates Europe from Africa? From Asia Minor? What inland sea is partly in Europe and partly in Asia?

What sea lies between *Germany* and *Sweden?* Name the countries which have a coast-line on this sea. What countries are separated by the *Gulf of Bothnia?* By the *Gulf of Finland?* What peninsula separates the *Baltic Sea* from the Atlantic Ocean? What countries does this peninsula contain?

What sea separates *Great Britain* from the *Scandinavian Peninsula?* Name the countries having a coast-line on this sea. What peninsula separates the *North Sea* from the Baltic?

What channel is south of Great Britain? What countries does it separate? Name the strait connecting it with the North Sea.

What peninsula is washed by the *Bay of Biscay*, the *Atlantic Ocean*, and the *Mediterranean Sea?* Name the countries of this peninsula. What two countries are partly separated by the Bay of Biscay? What bodies of water are joined by the *Strait of Gibraltar?*

Find two large peninsulas jutting south into the Mediterranean Sea. Name them. What sea is east of the *Italian Peninsula?* Of the *Balkan Peninsula?*

Name the countries which have a coast-line upon the Mediterranean Sea. Find a group of islands in the Mediterranean south of *Spain*. Name two large islands lying west of *Italy*, and one south of it. What large island is south-east of *Greece?*

Name the strait connecting the *Sea of Marmora* with the *Aegean*. What strait connects the Sea of Marmora with the *Black Sea?* What large peninsula projects into the Black Sea? What sea does it partly inclose? Name the countries of Europe which have a coast upon the Black Sea. What countries of Europe have no sea-coast at all? How many highland areas are there in Europe? Where is the largest of these? What mountain ranges partly separate Europe from Asia? What mountains form the *Scandinavian Highland?*

Find the *Great Plain of Europe*. Are there any mountains to prevent the west winds from the Atlantic from reaching it?

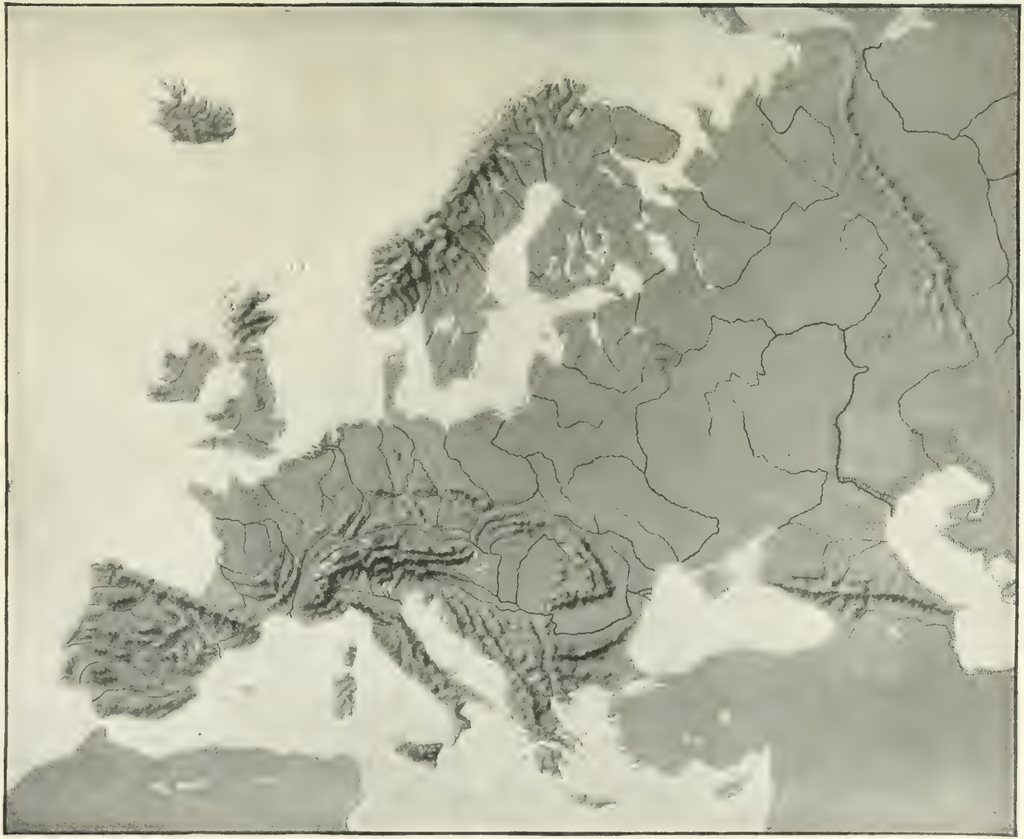
In what zones is Europe? In what zone is by far the greater part of the continent? What, then, are the main crops grown by the farmers of Europe?

The Importance of Europe.—*Europe* has long been the home of the most highly civilized races in the world. Her peoples have long been foremost in industry, commerce, science, and art. From her shores went the great sailors and adventurers who opened up whole new continents for settlement. New Zealand, Australia, South America, North America, and South Africa are largely peopled to-day by men of European birth or descent. The civilization of these new lands is and will be the civilization of Europe adjusted to new conditions. From this point of view, Europe is the mother-continent of half the world.

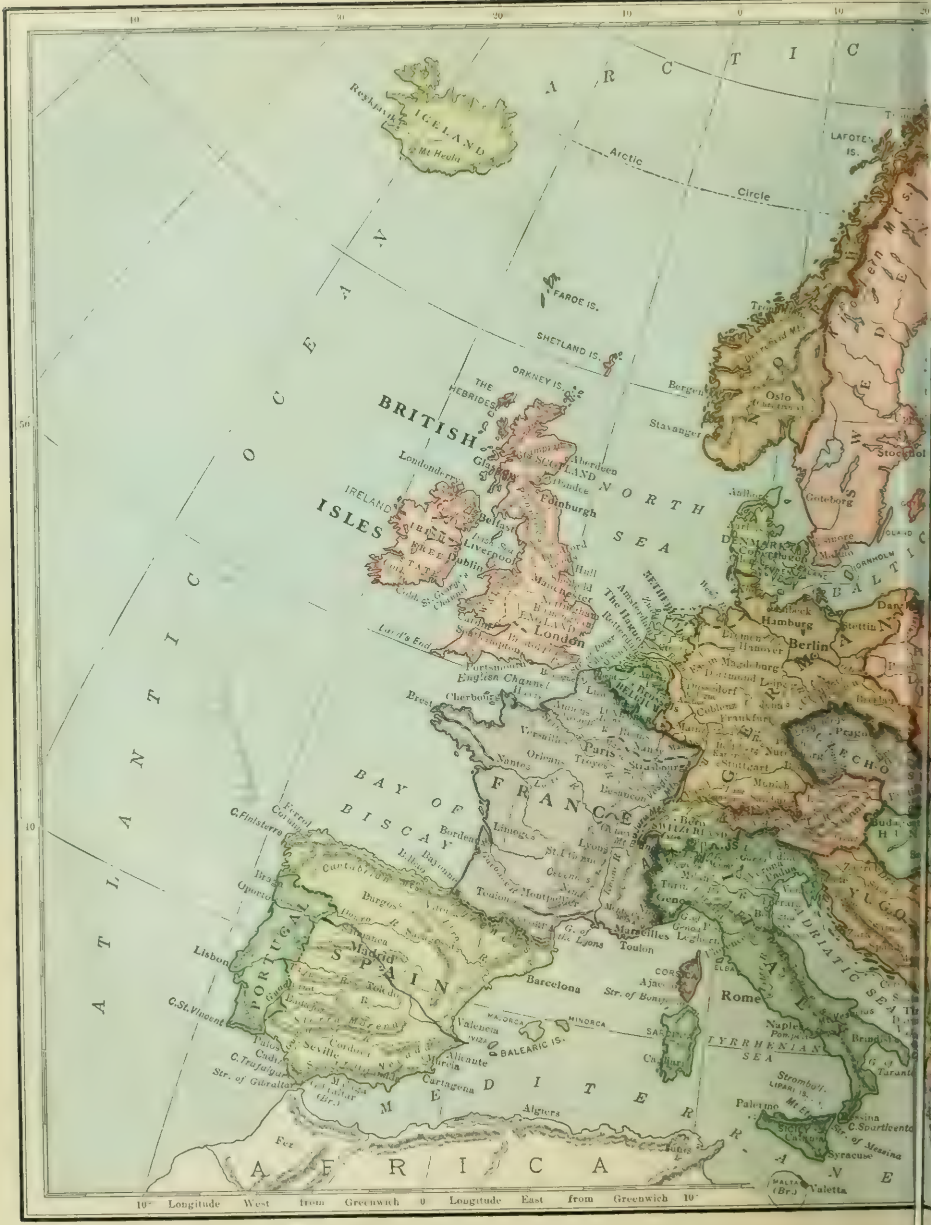
Yet this continent, the centre of our modern world, is comparatively small. It is only about one-fifth the size of Asia, and only a little over one-third as large as Africa. It is somewhat more than a third the size of our own continent of North America. Small as it is, however, it has a greater volume of trade, greater wealth, and more influence in the world than Asia, Africa, South America, and Australia combined.

Reasons for its Importance.—Europe's importance is due chiefly to the fact that it is the home of the white peoples of the world. The white races have proved themselves superior to all others in many ways. They are more eager to acquire knowledge and to put it to practical use. They are more energetic. They have a greater capacity for organization, which is one of the chief characteristics of civilized man.

The globe shows how Europe is situated with respect to the other continents. Asia lies to the east, Africa to the south. Europe is in fairly close touch with both. The products of Asia and Africa are easily brought to Europe by sea; from Asia by way of the Suez Canal and the Mediterranean, from Africa up the Atlantic sea-board or across the Medi-



RELIEF MAP OF EUROPE


ARCTIC
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Mt Hecla
Arctic Circle
LAFOTEN IS.
FAROE IS.
SHETLAND IS.
ORKNEY IS.
THE HEBRIDES
BRITISH ISLES
SCOTLAND
Aberdeen
Dundee
Glasgow
Edinburgh
Londonderry
IRELAND
IRISH FREE STATE
Belfast
Dublin
Irish Sea
Liverpool
Cork
Cobh
St. George's Channel
Hull
Manchester
Sheffield
Nottingham
Birmingham
ENGLAND
London
Cardiff
Bristol
Southampton
Portsmouth
Land's End
Dover
English Channel
NORTH SEA
Bergen
Oslo
Stavanger
Trondheim
NORWAY
SWEDEN
Stockholm
Goteborg
Malmo
DENMARK
Copenhagen
Aalborg
BORNHOLM
OLAND
BALTIC
NETHERLANDS
Amsterdam
The Hague
Rotterdam
Hamburg
Bremen
Hanover
Berlin
Stettin
Lubeck
Magdeburg
Dortmund
Leipzig
Dusseldorf
Coblenz
Frankfurt
GERMANY
Breslau
Prague
CZECHOSLOVAKIA
Nurnberg
Stuttgart
Munich
BELGIUM
Brussels
Lille
Brest
Cherbourg
Havre
Amiens
Versailles
Paris
Nancy
Strasbourg
Orleans
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FRANCE
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Limoges
Lyons
St. Etienne
Bayonne
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Toulouse
G. of the Lyons
Marseilles
Toulon
SWITZERLAND
Bern
Geneva
Mt Blanc
ALPS
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Milan
Verona
Genoa
Leghorn
Florence
ITALY
CORSICA
Ajaccio
ELBA
Str. of Bonifacio
Rome
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Cagliari
TYRRHENIAN SEA
Naples
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Mt Vesuvius
Brindisi
G. of Taranto
Stromboli
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Mt Etna
Palermo
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C. Spartivento
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SICILY
Catania
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YUGOSLAVIA
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Budapest
Ferrol
Coruna
C. Finisterre
Bilbao
Cantabrian Mts
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Braga
Oporto
Douro R.
Salamanca
Madrid
SPAIN
Toledo
Tagus R.
Barcelona
PORTUGAL
Lisbon
Guadiana R.
Badajoz
Sierra Morena
Cordova
Seville
Sierra Nevada
C. St. Vincent
Palos
Cadiz
C. Trafalgar
Str. of Gibraltar
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IVIZA
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Murcia
Cartagena
MEDITERRANEAN
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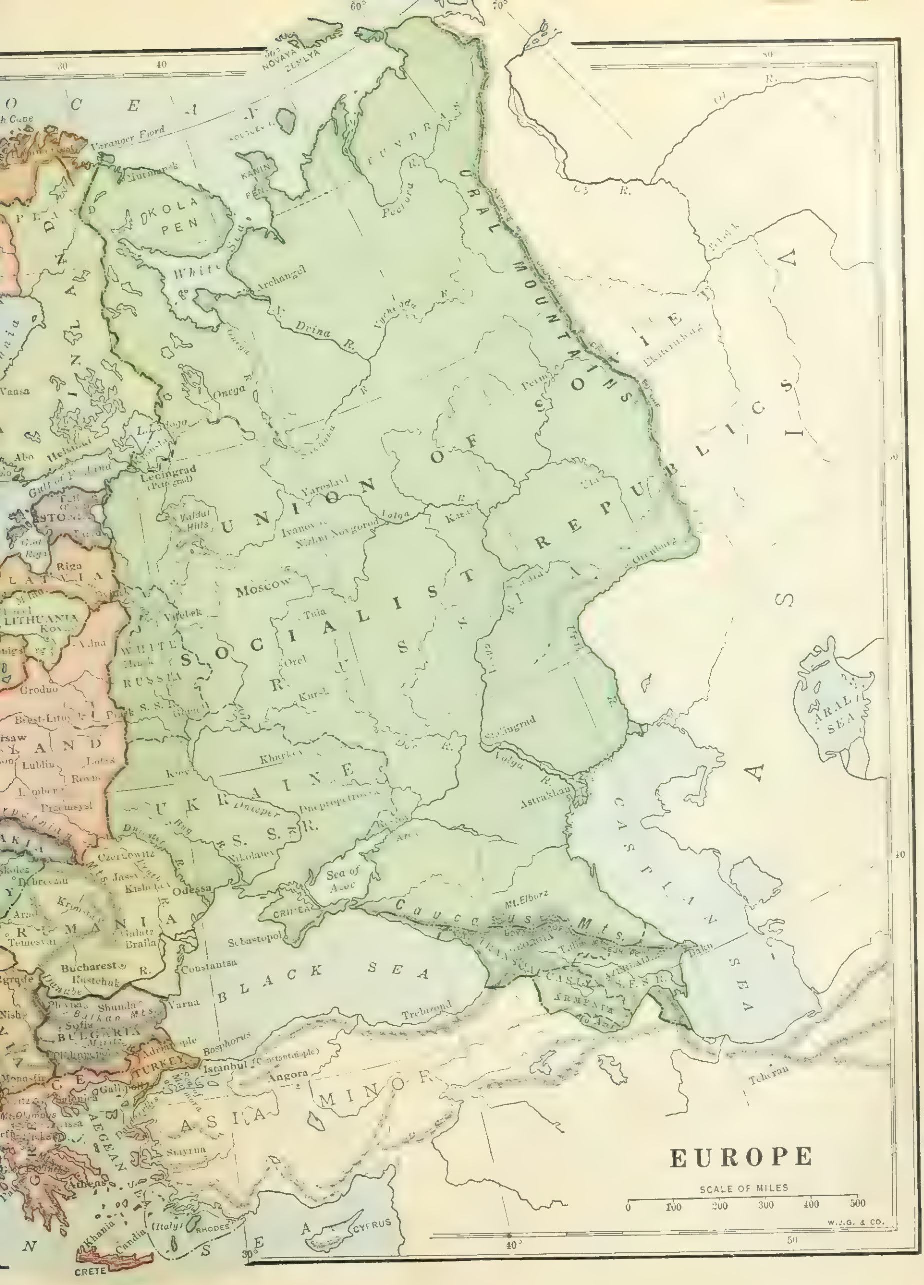
EUROPE
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W.J.G. & CO.
UNION OF SOVIET SOCIALIST REPUBLICS
R. S. F. S. R.
UKRAINE S. S. R.
WHITE RUSSIA S. S. R.
ASIA
ASIA MINOR
FINLAND
ESTONIA
LATVIA
LITHUANIA
POLAND
RUMANIA
BULGARIA
TURKEY
NOVAYA ZEMLYA
KOLA PEN.
KANIN PEN.
TUNDRAS
URAL MOUNTAINS
White Sea
Varanger Fjord
Murmansk
Archangel
Dvina R.
Pechora
Onega
L. Ladoga
Leningrad
(Petrograd)
Helsinki
Vaasa
Abo
Gulf of Finland
Riga
Valdai Hills
Yaroslavl
Ivanovo
Nizhni Novgorod
Volga
Kazan
Perm
Moscow
Tula
Orel
Kursk
Vitebsk
Vilna
Kovno
Grodno
Brest-Litovsk
Pinsk
Warsaw
Lublin
Lutsk
Rovno
Lemberg
Przemysl
Kiev
Kharkov
Dnepropetrovsk
Dnieper
Bug
Dniester
Nikolaev
Odessa
Kishinev
Czernowitz
Jassy
Galatz
Braila
Debreczen
Arad
Temesvar
Bucharest
Rustchuk
Danube
Constantsa
Varna
Shumla
Plevna
Sofia
Balkan Mts.
Philippopel
Adrianople
Crimea
Sebastopol
Sea of Azov
Don R.
Stalingrad
Astrakhan
Ural R.
Orenburg
Caucasus Mts.
Mt. Elburz
Georgia
Armenia
Azerbaijan
Tiflis
Baku
CASPIAN SEA
ARAL SEA
BLACK SEA
Bosphorus
Istanbul (Constantinople)
Angora
Trebizond
Smyrna
Gallipoli
Mt. Olympus
AEGEAN SEA
Athens
Corinth
Rhodes
(Italy)
Candia
Khania
CRETE
CYPRUS
Teheran
Ob R.
Irtysh
Tobolsk
40°
50
30°
60°
70°

terranean. Across the Atlantic are the two Americas. Thus Europe is favourably situated for trading with both the Old and the New World. This is one reason for her enormous commerce.

The coast-line of Europe is extremely irregular. Everywhere along the west and the south the sea cuts deep into the land. In fact, the coast-line of Europe is so irregular, and the arms of the sea extend so far inland that no part of the continent, except eastern Russia, is more than four hundred miles from the sea. This is a second reason for the early and extensive development of its maritime commerce.

Population.—Europe is the most densely populated of all the continents. Nearly half as many people live in Europe as in Asia, although Asia is nearly five times as large. The population of Europe is fifty times that of Canada, although Canada and Europe are nearly equal in area. You may wonder how so small a continent can support so great a population. One reason for this is that Europe is particularly favoured in climate, so that agriculture is possible even in the far north of the continent. Another reason is that Europe manufactures a great many things in vast quantities and exchanges these for foodstuffs brought from other lands.

The great Harbour of Rotterdam, The Netherlands

The Highlands.—Europe contains three highland areas—one in the north-west, one in the north-east, and one in the south. The first is formed by a range of mountains which parallels the west coast of Norway, is broken by the North Sea, and reappears in the north of *Scotland*, north-western England, and *Wales*. This is known as the *Scandinavian Highland*. Long ago it was all covered with ice, which moved slowly down the valleys in huge glaciers. Districts over which glaciers have moved are said to be *glaciated*. In glaciated regions are often found many small lakes, lying in the hollows formed by the ice many, many centuries ago.

The *Ural Mountains* form the *Eastern Highland*. They are low, for the most part, and offer no beautiful scenery such as abounds in the Scandinavian Highland. They are, however, extremely rich in minerals, especially in iron, gold, silver, platinum, and coal.

The highest and most important mountains of Europe are in the south. One central series of mountain chains extends right from the Bay of Biscay to the Black Sea. The central part of the series is formed by the lofty *Alps*, the most famous mountains in the world.

All Europe south of these mountain ranges is mountainous, with the exception of narrow strips around the coasts and in the valleys of some of the larger rivers. North of the central chain lies a semicircle of high ground, formed by the *Carpathian Mountains* and many smaller ranges. Inclosed by this semicircle and the Alps is a plain of extremely fertile land. This is called the *Plain of Hungary*.

The Great Plain.—The rest of Europe is a great plain, extending from the Bay of Biscay on the west and the Black Sea upon the east right to the Arctic Ocean. The only elevation of any size in all this great expanse of land is the *Valdai Plateau*, situated a little to the south-east of the *Gulf of Finland*. The elevation of the land even there is only about 1,000 feet, but it is of importance, because several of the great rivers of Europe rise there.

The northern margin of the great plain bordering on the Arctic Ocean is very similar to that of North America. It is a dreary plain, covered with moss, coarse grass, and lichens. The natives of the tundra in Europe depend upon fishing, hunting, and herds of reindeer for their living. The *Lapps*, who live in the extreme north-western corner of the continent, are the most important of these tribes.

South of the tundra belt we find forests of pine, fir, tamarack, and birch, which extend in an unbroken belt right from the Atlantic Ocean to the Pacific across Europe and Asia. In Europe, as in our own continent, these northern forests shelter many fur-bearing animals. Their skins are the chief source of wealth for the hunters who make their home in the gloomy depths of the forest. On the southern border of this forest, where the trees are large, much timber has been cut, and large areas have been cleared for cultivation.

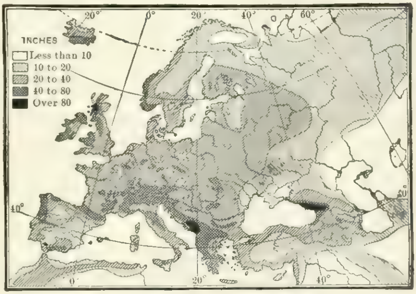
To the south of the northern forest there was once a broad belt of deciduous trees, that is, trees which shed their leaves annually. This forest once covered all Western and Central Europe from the Carpathians to the northern forest. Most of it has been cut down, and the ground it covered is now an area of fertile farms, on which crops of barley, rye, oats, and wheat are grown.

In Eastern Europe the rainfall is less than along the west coast, for the rain-bearing westerlies have a long distance to travel before reaching it and lose much of their moisture in their course. Therefore toward the east the forest land soon passes into grass-land, or *steppe*. Most of the steppe is good agricultural ground, but that section of it lying about the north shore of the *Caspian Sea* is almost a desert.

Rivers.—The great central plain of Europe is well drained by many large rivers. The *Volga* drains a vast area of Eastern Europe. It forms a great highway through a part of the continent poorly supplied with railways, and makes possible a free interchange of products from the Caspian Sea to Central Russia.

Even more important are the rivers which rise in the southern highlands and flow northward or westward through the plain. The most important of these are the *Vistula*, emptying into the Baltic; the *Rhine*, flowing into the North Sea; the *Seine*, which reaches the English Channel; and the *Loire*, which discharges its waters into the Bay of Biscay. The lands through which they flow —*Poland, Germany, Holland*, and *France*— are all densely populated, and, consequently, these rivers carry a huge traffic.

The Plain of Hungary is watered by the *Danube*, one of the most important rivers of the continent. It rises in the *Black Forest*, a mountain range in southern Germany. After meandering through the Plain, it breaks through the *Balkan Mountains* by a long gorge, known as the *Iron Gate*, and then flows slowly to the Black Sea. It, too, traverses several rich and populous countries and is a great highway of trade to the ocean.



Rainfall Map of Europe

Climate.—Central and Northern Europe are exposed at all seasons to the effect of the westerlies. These winds have a clear course into the heart of the continent, since the great mountain ranges run east and west and do not check them. The Scandinavian Highland is not high enough to rob them of all their moisture. The west winds bring rain at all seasons and permit the cultivation of splendid crops of cereals. In summer the winds from the ocean are cooler than the land and moderate the heat. In winter they are warmer than the land and lessen the cold. Their effect, of course, is greatest upon the western coastal regions, which have a much more equable climate than places in the far interior in the same latitude. Even in Eastern Europe, however, there are not such great extremes of temperature as in North America.

Southern Europe, bordering the Mediterranean, has a very different climate. In the summer time it lies within the trade-wind belt, and, therefore, is practically rainless during that season. In the winter time, when the influence of the westerlies extends farther south, it fares better, for then the moist winds bring heavy rains. The wall of mountains on the north shelters Southern Europe from the cold north-east winds. Therefore it is a land of hot, rainless summers and mild, wet winters. Such a climate is called a *Mediterranean climate*.

The vegetation of this region corresponds to the climate. It consists mainly of long-rooted plants, which can endure the severe summer drought. The trees and shrubs are evergreen, and most of them have dark, glossy foliage. Among these may be mentioned the cypress, the holly, the myrtle, and the laurel. The grape-vine and the olive flourish, and fruits such as oranges, lemons, and figs grow well. Wheat, which needs little rain and much sunshine. is the main cereal grown. Two of the most useful trees are the cork-oak, the bark of which is used to make cork, and the chestnut, the nuts of which are used for food.

THE BRITISH ISLES

General.—The *British Isles* include the two large islands of *Great Britain* and *Ireland*, together with about 5,000 adjoining small islands. Great Britain and Northern Ireland, India, and the self-governing Dominions —Canada, Australia, South Africa, New Zealand, the Irish Free State, and Newfoundland,—together with the colonies and dependencies of the mother country scattered all over the world, constitute the British Empire.

Great Britain is the largest island in Europe and the most important island in the world. It includes the three countries of *England*, *Wales*, and *Scotland*. In length it is 600 miles, while its breadth varies from 30 to 260 miles. It is about one-fortieth of the size of Canada. The second island among the British Isles is Ireland, which is 300 miles long by 175 miles wide at its broadest part. The total population of the British Isles is a little over 47,000,000.

Great Britain is the commercial centre of the world. It seems strange at first sight that so small a country should hold such a decided supremacy in commerce. The commercial instinct has always been strong in the British people. For many centuries they continued to increase their trade with the continent. When Elizabeth was queen, came dreams of a world trade. (1) When new lands were found, they were claimed by the dauntless discoverers in the name of their sovereign. (2) The numerous wars in which Britain engaged gained for her many valuable colonies. Australia, New Zealand, and Newfoundland became hers by right of discovery; Canada, India, and South Africa by right of conquest. The trade of the colonies, especially in the early days, was almost entirely with the mother country, and this helped to build up the great import and export trade which Great Britain now enjoys.

Great Britain is an island kingdom. She must import food for her large population and raw materials for her factories. She must provide ships to carry to other lands the goods made in her factories. The result is that the United Kingdom to-day controls the carrying trade of the world. It is to her shipping that Great Britain owes much of her greatness as a commercial nation.

Two other factors have helped to make Britain a great trading nation. One is her method of managing and developing her colonies, especially in the less civilized parts of the world. She has never tried to exploit ignorant savages, but has treated them with kindness and justice, so that they have benefited by her rule. The other factor is the integrity of her merchants and traders. Add to these the ideal conditions for manufacturing which exist in the British Isles, and the inventive genius, the energy, and the determination of her people, and it is not hard to understand why Britain is the commercial mistress of the world.

The Houses of Parliament, London

ENGLAND AND WALES

Surface and Coast-line.—*England* and *Wales* occupy the southern two-thirds of the island of Great Britain. The middle and south-eastern parts are a rolling plain. The west is broken by mountains, the *Cambrian* occupying the greater part of Wales, and the *Cumbrian* and *Pennine Ranges* the north-western and central parts of England. The mountains, however, are not high, the highest peak in the Cambrians, *Mount Snowdon*, being only 3,570 feet in height. The beautiful lake district in the north-west of England is dotted with hundreds of small lakes. The rivers are small and sluggish, but many of them, by means of locks, have been made navigable for some distance inland. Canals connect most of the larger rivers. Find on the map the most important rivers of England.

The coast-line is long and is so indented by inlets that there is no place more than seventy miles from the sea. The east coast is in general low, so low in some parts that embankments are necessary to prevent the inroads of the sea. The south coast, east of the *Isle of Wight*, is a low, clay shore, with chalk cliffs here and there. West of this island the shore is high and precipitous. The west coast is generally bold, rocky, and in some cases very mountainous.

Climate.—The moist south-west winds from the ocean temper the climate of England and Wales, making the winters mild and the summers cool for the latitude. It should be remembered that London is in about the same latitude as the southern part of James Bay in Canada. The distribution of the abundant rainfall depends upon the winds and the position of the highlands. The west coast has more rain than the east. The easterly winds are cold in winter, since they blow from the cold continent of Europe; but the mountain ranges, such as the Pennines, running through the centre of the country, protect the region to the west.

Agriculture.—The warm, moist climate and the fertile soil make the plains of England an exceptionally fine farming country. The hills and more rugged slopes furnish pasturage for stock. Wheat, barley, and rye are the principal crops. The average yield of wheat to the acre in England is much higher than in either Canada or the United States. Immense quantities of garden vegetables are raised in all parts of the country. Hops are cultivated in the south. Cattle are raised for beef, butter, milk, and cheese, while large flocks of sheep furnish wool and mutton. A great deal of attention is paid to the breeding of high grades of cattle and sheep. Three of the *Channel Islands—Jersey*, *Guernsey*, and *Alderney*—have developed three breeds of cattle that are well known in Canada.

Owing to the multitude of people working in the factories and mines and living in the cities, England does not produce enough food for her inhabitants. Much food, such as wheat, bacon, fruits, butter, cheese, poultry, and eggs, has to be imported.

Fishing.—Ever since the Angles and Saxons first crossed the *North Sea* to make their homes in Britain, the English have always taken kindly to a sea-faring life. The island is close to the great fishing-grounds of the North Sea. A large population must be provided with food. These factors have led to the building up of a fishing industry in which tens of thousands of men are employed. The fishing vessels go far out into the Atlantic; many go even to the shores of Iceland; but the chief fishing-grounds are over the *Dogger Bank* in the North Sea. Haddock, herring, cod, sole, and mackerel are the chief food fishes caught.

Mining.—Coal and iron are the principal minerals. These are found close to deposits of limestone, so necessary in the smelting of iron ore. Coal is found principally in the valleys of the *Severn* and *Trent Rivers*, in Wales, and in the districts about *Newcastle* and *Manchester*. Coal is the only raw product of England and Wales which is produced in greater abundance than is needed for home use.

It was the presence of tin that first induced the Phoenicians to visit England, and tin is still mined, but in diminishing quantities. Slate, granite, salt, and excellent clay for the manufacture of pottery are also found.

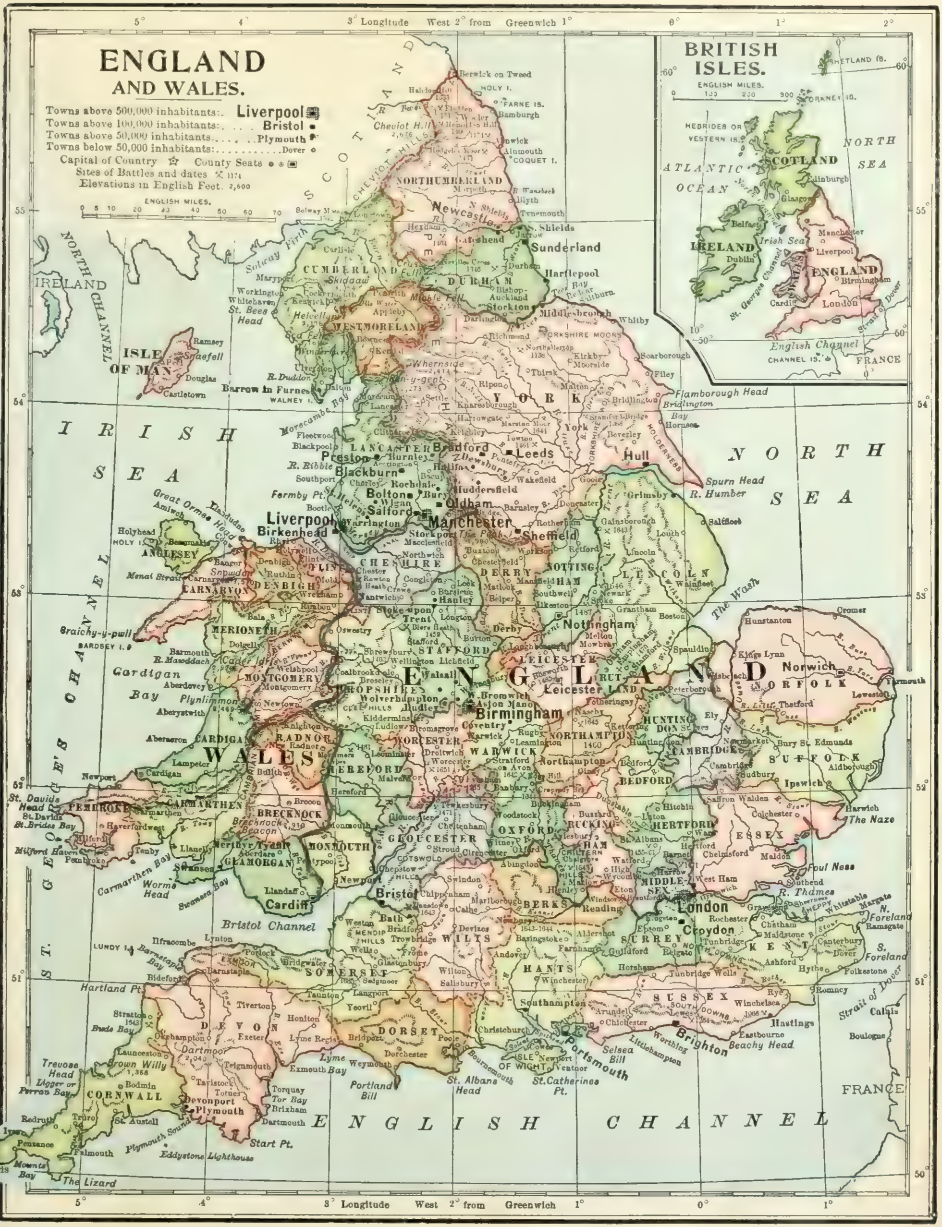
Manufacturing. — The situation of the British Isles makes it possible for raw material to be brought to her ports easily and cheaply by water, and then shipped to other countries as manufactured products. Owing to the conditions of moisture and temperature and to the enormous supply of coal and iron, the chief manufactures are cotton, woollen, and steel goods. More than 3,500,000 people are engaged in these three great industries alone.

More than half of the world's supply of cotton goods is made in England, and yet all the raw material—nearly 1,500,000,000 pounds a year—has to be imported. The raw cotton comes largely from the United States, Egypt, India, and the west coast of Africa. Most of the cotton factories are located in *Lancashire*. There the moist climate is favourable to spinning. In a dry air the cotton is in danger of becoming too brittle to weave and spin easily.

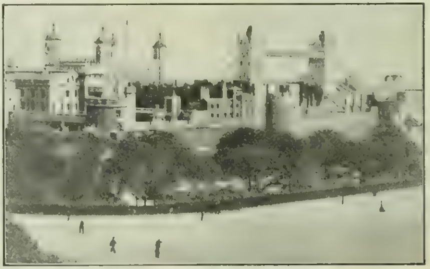
England has at least 16,000,000 sheep on her pastures. From these the finest of wool is obtained, and yet three-fourths of the wool used in the factories is imported, principally from Australia, New Zealand, Argentina, and South Africa. The woollens turned out from the factories include broadcloths, worsteds, tweeds, cashmeres, merinos, carpets, blankets. underwear, hosiery, and yarn.

The commanding position that England now occupies in the world of commerce is due largely to her immense supplies of coal and iron and to the close proximity in which these minerals are found. But the steel mills can use much more iron than is mined in England, so that ore is imported from Sweden, Spain, and other countries. The manufactures include machinery of all kinds, steel ships, locomotives, steel rails, chains, cables, anchors, automobiles, bicycles, cutlery, tools, screws, nails, and pens.

In addition to the cotton, woollen, iron, and steel industries, England has other important manufactures. There are many linen and jute mills and silk factories. Brewing and distilling give employment to many people, while jams, marmalade, pickles, and sauces are produced in large quantities. Fine china and pottery are made from a special kind of clay found in several parts of England. Paper is made from imported wood-pulp. The shipyards turn out yearly large numbers of wooden ships. Leather goods, furniture, dyestuffs, and chemicals are other manufactures.

ENGLAND
AND WALES.
Towns above 500,000 inhabitants: Liverpool
Towns above 100,000 inhabitants: Bristol
Towns above 50,000 inhabitants: Plymouth
Towns below 50,000 inhabitants: Dover
Capital of Country ☆
County Seats
Sites of Battles and dates ✕ 1174
Elevations in English Feet. 2,600
ENGLISH MILES.
0 5 10 20 30 40 50 60 70
3° Longitude West 2° from Greenwich 1°
5°
4°
0°
1°
2°
55°
54°
53°
52°
51°
50°
BRITISH
ISLES.
ENGLISH MILES.
0 100 200 300
SHETLAND IS.
ORKNEY IS.
HEBRIDES OR WESTERN IS.
ATLANTIC
OCEAN
NORTH
SEA
SCOTLAND
Edinburgh
Glasgow
North Channel
Belfast
IRELAND
Dublin
Irish Sea
Manchester
Liverpool
WALES
ENGLAND
Birmingham
St. George's Channel
Cardiff
London
Strait of Dover
English Channel
CHANNEL IS.
FRANCE
SCOTLAND
CHEVIOT HILLS
Cheviot Hill 2,676
Berwick on Tweed
HOLY I.
FARNE IS.
Bamburgh
Alnwick
Alnmouth
COQUET I.
NORTHUMBERLAND
Morpeth
R. Wansbeck
Blyth
Tynemouth
N. Shields
Newcastle
S. Shields
Hexham
Gateshead
Jarrow
Sunderland
Solway Firth
Carlisle
Maryport
CUMBERLAND
Skiddaw
Cross Fell
DURHAM
Durham
Hartlepool
Tees Bay
Saltburn
Workington
Whitehaven
St. Bees Head
Cockermouth
Keswick
Helvellyn
Penrith
Appleby
Bishop-Auckland
Stockton
Middlesbrough
Whitby
Mickle Fell
Darlington
WESTMORELAND
Richmond
YORKSHIRE MOORS
Northallerton
Kirkby-Moorside
Scarborough
Filey
Kendal
Whernside
Ingleborough
Ulverston
Dalton
R. Duddon
Barrow in Furness
WALNEY I.
Thirsk
Malton
Ripon
Settle
YORK
Knaresborough
Bridlington
Flamborough Head
Bridlington Bay
Hornsea
Harrogate
Marston Moor 1644
Towton 1461
Stamford Bridge 1066
York
Beverley
HOLDERNESS
Hull
Spurn Head
R. Humber
Morecambe Bay
Lancaster
Clitheroe
Keighley
Fleetwood
Blackpool
LANCASTER
Bradford
Leeds
Preston
Burnley
Accrington
Halifax
Dewsbury
Pontefract
Wakefield
Goole
R. Ribble
Blackburn
Southport
Chorley
Rochdale
Huddersfield
Bacup
Bolton
Bury
Oldham
Barnsley
Doncaster
Grimsby
Fermby Pt.
Wigan
Salford
Manchester
St. Helens
Bootle
Liverpool
Birkenhead
Warrington
Stockport
The Peak
Sheffield
Rotherham
Gainsborough
Louth
Saltfleet
Great Ormes Head
Llandudno
Conway
Amlwch
Holyhead
HOLY I.
Beaumaris
ANGLESEY
Menai Strait
Bangor
Carnarvon
Snowdon 3,571
Denbigh
Ruthin
Rhyl
Holywell
Flint
FLINT
Mold
Chester
Rowton Heath
Nantwich
Crewe
Macclesfield
Northwich
CHESHIRE
Congleton
Leek
Buxton
Chesterfield
Worksop
Retford
NOTTINGHAM
Lincoln
LINCOLN
Wainfleet
The Wash
DENBIGH
Wrexham
CARNARVON
DERBY
Matlock
Mansfield
Southwell
Newark
Belper
Burslem
Hanley
Stoke upon Trent
Longton
Ilkeston
Nottingham
Grantham
Boston
Hunstanton
Cromer
Bala
Ruabon
Oswestry
Braichy-y-pwll
BARDSEY I.
MERIONETH
Dolgelly
Barmouth
R. Mawddach
Cader Idris 2,929
Blore Heath 1459
Stafford
STAFFORD
Burton
Derby
Loughborough
Melton Mowbray
Oakham
Stamford
Spalding
Kings Lynn
Norwich
NORFOLK
Yarmouth
Shrewsbury
Wellington
Lichfield
LEICESTER
RUTLAND
Peterborough
Wisbech
Thetford
Lowestoft
Cardigan Bay
Aberdovey
Welshpool
MONTGOMERY
Montgomery
Coalbrookdale
Broseley
SHROPSHIRE
Walsall
Wednesbury
Bosworth 1485
Leicester
ENGLAND
Fotheringay
Plynlimmon 2,469
Newtown
Wolverhampton
Dudley
W. Bromwich
Aston Manor
Birmingham
Naseby 1645
Kettering
HUNTINGDON
St. Ives
Ely
Aberystwith
CLEE HILLS
Kidderminster
Coventry
Rugby
NORTHAMPTON
Huntingdon
Newmarket
Bury St. Edmunds
SUFFOLK
Aberaeron
CARDIGAN
RADNOR
Knighton
New Radnor
Ludlow
Bromsgrove
WORCESTER
Warwick
Leamington
Northampton 1460
CAMBRIDGE
Cambridge
Lampeter
WALES
Builth
Leominster
Droitwich
Worcester 1651
WARWICK
Stratford on Avon
Edgehill 1642
Olney
Bedford
Sudbury
Aldborough
Ipswich
Cardigan
Newport
HEREFORD
Malvern
Evesham 1265
Banbury
BEDFORD
Hitchin
Saffron Walden
Colchester
Harwich
The Naze
St. Davids Head
St. Davids
St. Brides Bay
PEMBROKE
CARMARTHEN
Carmarthen
Brecon
BRECKNOCK
Brecknock Beacon 2,910
Hereford
Tewkesbury 1471
Gloucester
Cheltenham
Woodstock
Buckingham
BUCKINGHAM
HERTFORD
Ware
ESSEX
Haverfordwest
Milford
Milford Haven
Pembroke
Tenby
Llanelly
Merthyr Tydfil
Aberdare
Monmouth
MONMOUTH
GLOUCESTER
OXFORD
Aylesbury
CHILTERN HILLS
St. Albans
Barnet
Hertford
Chelmsford
Maldon
Foul Ness
Carmarthen Bay
Swansea
GLAMORGAN
Pontypool
COTSWOLD HILLS
Stroud
Cirencester
Witney
Oxford
Abingdon
High Wycombe
Watford
Harrow
West Ham
Southend
Worms Head
Swansea Bay
Llandaff
Cardiff
Chepstow
Newport
Bristol
Chippenham
Swindon
Marlborough
BERKS
Henley
Marlow
Eton
Windsor
Reading
MIDDLESEX
London
Woolwich
R. Thames
Gravesend
SHEPPY
Whitstable
Margate
N. Foreland
Ramsgate
Bristol Channel
Bath
Lansdown 1643
Calne
Devizes
Newbury 1643-1644
Kingston
Epsom
Croydon
Rochester
Chatham
Maidstone
Canterbury
LUNDY I.
Ilfracombe
Lynton
Barnstaple Bay
Weston
MENDIP HILLS
Bradford
Trowbridge
WILTS
Basingstoke
Aldershot
SURREY
Guildford
Reigate
Tunbridge
KENT
Dover
S. Foreland
Porlock
EXMOOR
Bridgwater
Wells
Frome
Glastonbury
Andover
Farnham
Ashford
Hythe
Folkestone
Bideford
Barnstaple
SOMERSET
Sedgemoor 1685
Wilton
Salisbury
HANTS
Winchester
Horsham
Tunbridge Wells
Hartland Pt.
Taunton
Langport
Rye
Romney
Strait of Dover
Calais
Tiverton
Yeovil
Southampton
Arundel
SUSSEX
SOUTH DOWNS
Winchelsea
Lewes 1264
Hastings 1066
Boulogne
Stratton 1643
Bude Bay
DEVON
Honiton
Exeter
Okehampton
Lyme Regis
Bridport
DORSET
Poole
Christchurch
Chichester
Worthing
Brighton
Eastbourne
Beachy Head
Dartmoor 2,040
Dorchester
Bournemouth
Spithead
Portsmouth
Selsea Bill
Littlehampton
Trevose Head
Brown Willy 1,368
Launceston
Teignmouth
Lyme Bay
Exmouth
Weymouth
ISLE OF WIGHT
Cowes
Newport
Ventnor
St. Catherines Pt.
Ligger or Perran Bay
Bodmin
Tavistock
Totnes
Torquay
Tor Bay
Brixham
Portland Bill
St. Albans Head
CORNWALL
Devonport
Plymouth
Dartmouth
Start Pt.
Redruth
Truro
St. Austell
Plymouth Sound
Eddystone Lighthouse
Penzance
Falmouth
Mounts Bay
The Lizard
ENGLISH CHANNEL
FRANCE
NORTH SEA
IRISH SEA
NORTH CHANNEL
ST. GEORGE'S CHANNEL
IRELAND
ISLE OF MAN
Ramsey
Snaefell
Peel
Douglas
Castletown
Solway Moss

Trade and Commerce.—As we have already noted, England has an enormous trade with all parts of the world. Her internal trade is also very large, as is to be expected in a country so densely populated. An excellent railway system provides quick transportation. A large part of the imports of England comes from the British Dominions and colonies. Canada, for instance, ships to her shores wheat, cattle, bacon, butter, cheese, apples, and lumber.


Picturesque London—Tower of London and Tower Bridge

Cities and Towns.—*London,* the largest city in the world, is situated at almost the centre of the Land Hemisphere. To the east are the thickly populated nations of Europe, which cannot supply their own needs; to the west is America, with its abundance of raw material; behind it are the great manufacturing cities of England. These advantages have helped to make London the leading financial and commercial centre of the world, and account largely for its enormous population of 7,850,000 people. The Houses of Parliament, Westminster Abbey, St. Paul's Cathedral, the Tower, the British Museum, the National Art Gallery, the University of London, the hospitals, parks, zoological gardens, and docks—which stretch along the Thames for twenty miles—all make London a city of intense interest to visitors. Within London is *Greenwich,* where is located the Observatory from which we regulate our time, and from which our meridians of longitude are numbered. Near by, too, is Windsor Castle, one of the residences of the royal family.

Liverpool, situated on the *Mersey River* three miles from the *Irish Sea,* is the third in size of the cities of Great Britain and is the port through which passes most of the import and export trade with Canada, the United States, and the West Indies. It is a large manufacturing city, and it also possesses handsome public buildings, libraries, and art museums. *Manchester,* an inland port, is connected with the mouth of the Mersey by a ship-canal, thirty-five miles in length. The city is the centre of the great cotton industry. *Birmingham,* about seventy-five miles south-east of Liverpool, is the great iron city of England. It is surrounded on all sides by immense beds of coal and iron. *Sheffield* is noted for its cutlery and steel rails, and for grindstones, the material for which is found near at hand. *Leeds* and *Bradford* are the two great woollen manufacturing cities. *Newcastle* lies in the midst of a rich coal district. *Bristol* on the *Avon River* and *Cardiff* on the west coast are important seaports. *Plymouth,* on the south coast, is a naval station, while *Portsmouth,* to the east, contains the government navy yards. *Southampton,* also on the south coast, has an excellent harbour. *Hull,* on the north bank of the *Humber River,* is the shipping port for the products of a large manufacturing district. *Huddersfield,* in Yorkshire, is the chief centre of the dye industry.

Canterbury, York, Winchester, Lincoln, and *Peterborough* are famed as the seats of magnificent cathedrals, noble specimens of architecture. *Oxford,* England's oldest university town, with its stately colleges, its castle, and its cathedral, is the home of classical learning, as *Cambridge* is the home of mathematical training. At *Stratford,* on the *Avon River,* Shakespeare was born.

The English Islands.—In the *Irish Sea,* thirty miles from the coast of England, lies the *Isle of Man,* a mountainous island with an area of 227 square miles and a population of 60,000. The Manxmen are descendants of the Celts, but the Celtic language is passing out of use. Agriculture and stock-raising are carried on in the valleys, and copper, lead, and zinc are mined. The

Isle of Wight, with an area of 145 square miles, lies about two miles from the south coast, from which it is separated by the *Solent*. Its beautiful scenery, fine roads, and pleasant climate attract summer visitors in large numbers. Off the north-west coast of France are the *Channel Islands*, the most important of which are *Jersey*, *Guernsey*, *Alderney*, and *Sark*. The entire area of the group is seventy-five square miles, and the population is almost 100,000. Although the islands have belonged to England since the time of William the Conqueror, the people still retain most of their old French laws and customs and speak a dialect of the French tongue. Potatoes, fruits, and dairy products are shipped in immense quantities to England. The islands are noted for their cattle. As the scenery is magnificent and the climate delightful, the islands are a favourite summer resort. *St. Helier*, on the island of Jersey, is the most important town. All the islands are strongly fortified.

SCOTLAND

Surface and Coast-line.—*Scotland* occupies the northern third of the island of Great Britain. It is separated from England by the *Cheviot Hills* and the *Tweed River*. In the south is an upland region lying north of the English border. In the north are the mountains of the *Scottish Highlands*. Between these two uplands is a lowland plain. The *Grampian Mountains*, which form the southern part of the Highlands, contain *Ben Nevis*, 4,406 feet in height, the highest mountain in the British Isles. The watershed of Scotland is near the west coast. Accordingly, the rivers flowing east, such as the *Tweed, Forth*, and *Tay*, are much larger than those flowing westward. The *Clyde*, however, although only 105 miles in length, is the most important river in Scotland. About a third of the people of the country live on its banks.

The coast of Scotland is so indented by arms of the sea that no part of the country is more than forty miles from sea-water. On the east coast the land declines gradually to the beach or to the bordering cliffs, and the shores are generally low and cultivated to the tidal line. In the west the coast is bold and picturesque, and presents a succession of projecting headlands, deep inlets, and long peninsulas. Off the coasts of Scotland are many hundreds of islands.

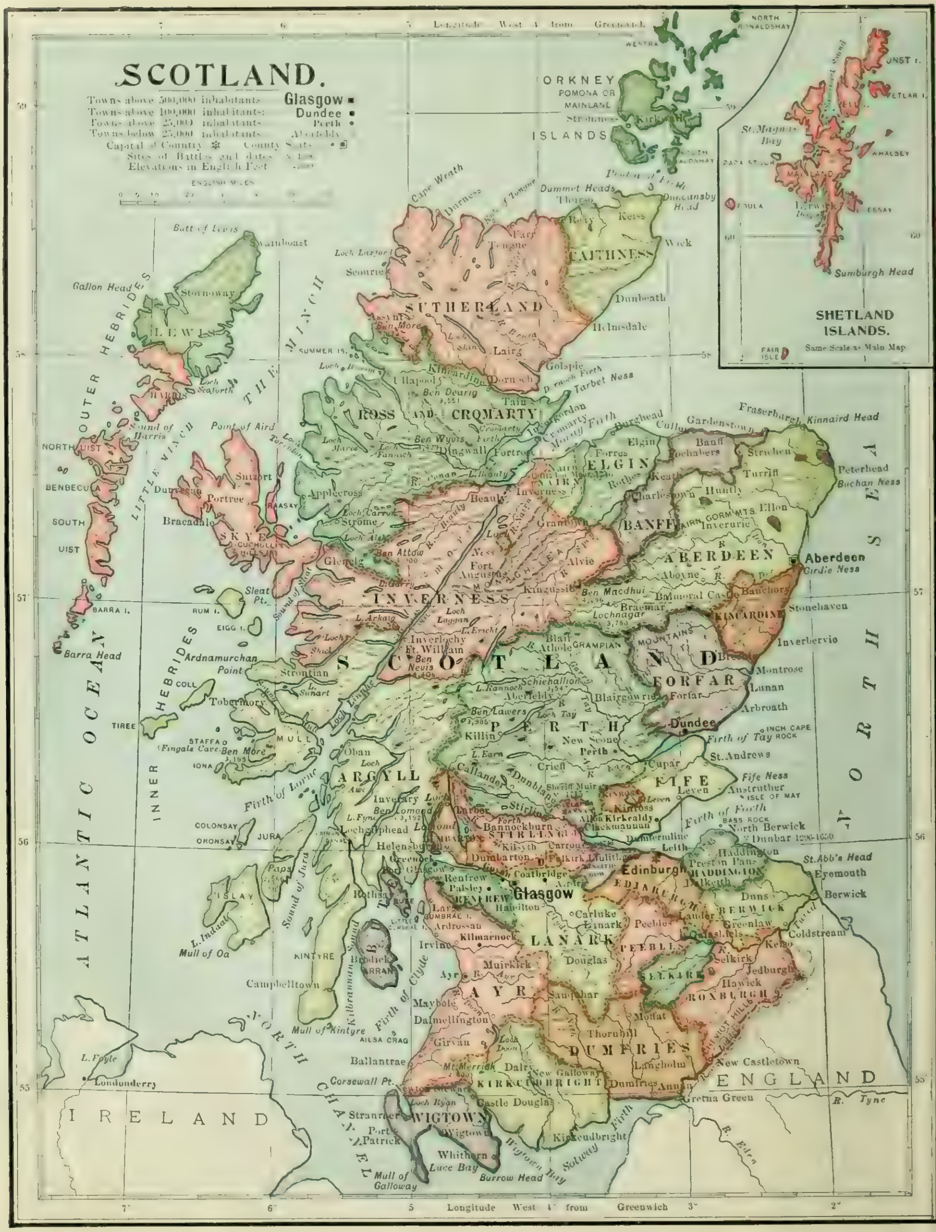
The scenery of Scotland is so magnificent that each year more and more visitors are attracted to the country. The wild, rugged mountains, the secluded valleys and glens, the hillsides covered with heather and broom, the rocky inlets and islands along the coast, present a picture which, once seen, is never forgotten. Most picturesque of all, perhaps, are the lakes which nestle in the valleys between the mountains. Many of these, such as *Loch Lomond*, *Loch Shiel*, *Loch Katrine*, and *Loch Maree*, are of rare beauty and loveliness. The famous *Caledonian Canal*, which unites the Atlantic with the North Sea, is now used chiefly by tourists.

Ellen's Isle, Loch Katrine, Scotland

Climate.—In the Lowlands of Scotland the climate is cooler than that of England at all seasons. As in England, the western part of the country has a greater rainfall than the eastern.

Industries.—The soil of the central Lowlands is very good and is in a very excellent state of cultivation. It produces fine crops of oats, barley, wheat, potatoes, and turnips. The Highlands are famous for cattle; the southern uplands, for sheep.

The fisheries, as in England, are a great source of wealth to the people. Herring,



SCOTLAND.

Towns above 500,000 inhabitants Glasgow ■
Towns above 100,000 inhabitants Dundee ●
Towns above 25,000 inhabitants Perth •
Towns below 25,000 inhabitants Aberfeldy
Capital of Country ✡ County Seats • ◙
Sites of Battles and dates
Elevations in English Feet
ENGLISH MILES
0 5 10 20
Longitude West 4° from Greenwich
SHETLAND ISLANDS.
Same Scale as Main Map
NORTH RONALDSHAY
UNST I.
YELL
FETLAR I.
St. Magnus Bay
PAPA STOUR
WHALSEY
MAINLAND
FOULA
Lerwick
BRESSAY
Sumburgh Head
FAIR ISLE
ORKNEY
POMONA OR MAINLAND
Stromness
Kirkwall
ISLANDS
WESTRA
HOY
Pentland Firth
Dunnet Head
Duncansby Head
Thurso
Wick
CAITHNESS
Keiss
Dunbeath
Helmsdale
Cape Wrath
Durness
Kyle of Tongue
Tongue
Farr
Loch Laxford
Scourie
SUTHERLAND
Assynt
Ben More
Loch Shin
Lairg
Golspie
Dornoch
Dornoch Firth
Tarbet Ness
Kincardine
Ullapool
Ben Dearg 3,551
ROSS AND CROMARTY
Tain
Invergordon
Cromarty Firth
Ben Wyvis
Dingwall
Fortrose
Loch Maree
Loch Torridon
Loch Fannich
R. Conan
Applecross
Loch Carron
Strome
Loch Alsh
Glenelg
Butt of Lewis
Swainbost
Gallon Head
Stornoway
LEWIS
HARRIS
Loch Seaforth
OUTER HEBRIDES
THE MINCH
LITTLE MINCH
SUMMER IS.
Sound of Harris
NORTH UIST
BENBECULA
SOUTH UIST
BARRA I.
Barra Head
Point of Aird
Snizort
Dunvegan
Portree
RAASAY
Bracadale
SKYE
CUCHULLIN
Sleat Pt.
Sound of Sleat
RUM I.
EIGG I.
Ardnamurchan Point
COLL
TIREE
INNER HEBRIDES
Tobermory
MULL
Ben More 3,185
STAFFA
(Fingals Cave)
IONA
COLONSAY
ORONSAY
JURA
Paps
Sound of Jura
ISLAY
L. Indaal
Mull of Oa
KINTYRE
Campbelltown
Mull of Kintyre
Kilbrannan Sound
ARRAN
Brodick
BUTE
Rothsay
LITTLE CUMBRAE
GREAT CUMBRAE I.
AILSA CRAG
Firth of Clyde
Firth of Lorne
Strontian
L. Sunart
Sound of Mull
Oban
Loch Awe
ARGYLL
Inveraray
L. Fyne
Lochgilphead
Ben Lomond 3,192
Loch Lomond
Helensburgh
Greenock
Port Glasgow
Dumbarton
DUMBARTON
Renfrew
Paisley
RENFREW
Glasgow
Coatbridge
Airdrie
Hamilton
Largs
Ardrossan
Irvine
Kilmarnock
Ayr
R. Ayr
AYR
Maybole
Dalmellington
Girvan
Ballantrae
Muirkirk
Sanquhar
Douglas
Carluke
Lanark
LANARK
ATLANTIC OCEAN
NORTH CHANNEL
Corsewall Pt.
Stranraer
Port Patrick
Loch Ryan
Newton Stewart
WIGTOWN
Wigtown
Whithorn
Luce Bay
Mull of Galloway
Burrow Head
Wigtown Bay
Mt. Merrick
Dalry
Loch Doon
New Galloway
KIRKCUDBRIGHT
Castle Douglas
Kirkcudbright
Solway Firth
Dumfries
Annan
Gretna Green
DUMFRIES
Thornhill
Moffat
Langholm
New Castletown
CHEVIOT HILLS
ENGLAND
R. Tyne
R. Eden
R. Tweed
IRELAND
L. Foyle
Londonderry
INVERNESS
Inverness
Beauly
R. Beauly
Loch Ness
Fort Augustus
Ben Attow 4,000
L. Garry
Loch Arkaig
Loch Shiel
Inverlochy
Ft. William
Ben Nevis 4,406
Loch Eil
Loch Leven
Loch Laggan
L. Ericht
Kingussie
Alvie
R. Spey
Grantown
Nairn
NAIRN
Culloden Moor 1746
Moray Firth
Burghead
Cullen
Elgin
ELGIN
Forres
Rothes
Keith
Fochabers
Banff
BANFF
Gardenstown
Fraserburgh
Kinnaird Head
Strichen
Turriff
Peterhead
Buchan Ness
Huntly
Charlestown
Ellon
Inverurie
GORM MTS.
CAIRN GORM MTS.
ABERDEEN
Aberdeen
Girdle Ness
R. Don
R. Dee
Aboyne
Balmoral Castle
Braemar
Ben Macdhui 4,296
Lochnagar 3,780
Banchory
KINCARDINE
Stonehaven
Inverbervie
GRAMPIAN MOUNTAINS
Blair Athole
Schiehallion 3,547
L. Rannoch
Aberfeldy
Ben Lawers 3,984
Loch Tay
Killin
PERTH
Perth
New Scone
Blairgowrie
Crieff
L. Earn
Callander
Dunblane
Sheriff Muir 1715
Stirling
Forth
Bannockburn
STIRLING
Kilsyth
Carron
Falkirk
Linlithgow
FORFAR
Forfar
Brechin
Montrose
Lunan
Arbroath
Dundee
Firth of Tay
INCH CAPE ROCK
St. Andrews
Cupar
FIFE
Leven
Fife Ness
Anstruther
ISLE OF MAY
KINROSS
Kinross
Loch Leven
Alloa
Kirkcaldy
Clackmannan
Dunfermline
Firth of Forth
BASS ROCK
North Berwick
Dunbar 1296-1650
Leith
Edinburgh
EDINBURGH
Dalkeith
Haddington
Preston Pans
HADDINGTON
St. Abb's Head
Eyemouth
Berwick
Duns
BERWICK
Greenlaw
Lauder
Coldstream
Kelso
Galashiels
PEEBLES
Peebles
Selkirk
SELKIRK
Jedburgh
Hawick
ROXBURGH
NORTH SEA
SCOTLAND

haddock, and cod are caught off the coast and in the North Sea fishing-grounds, while salmon abound in the rivers. Many Scottish seamen are engaged in the seal fisheries.

All that has been said in regard to manufacturing in England may be applied equally to the Lowlands of Scotland. Immense quantities of iron and coal are found close together, and, as a result, great woollen, cotton, linen, jute, hemp, and steel factories have sprung up. There are numerous distilleries and breweries. Other manufactures are sugar, paper, gloves, shawls, glass, jams, and marmalade.

The commerce of Scotland is much the same as that of England. Internal and coastal trade is large, on account of the good harbours along the coasts and the large number of railways and canals, especially in the Lowlands. The imports are raw materials for manufacture and food-stuffs. The exports are chiefly manufactured goods.

Cities and Towns.—The capital, *Edinburgh*, has a most picturesque situation on lofty parallel ridges about two miles from the south shore of the *Firth of Forth*. It is the literary and educational centre of Scotland. Among the principal industries are printing and book-binding. The city contains many superb public buildings, art galleries, museums, and hospitals. It is rich in objects of historical interest, such as Edinburgh Castle, Holyrood Palace, and St. Giles' Church. *Leith*, two miles distant on the Firth of Forth, is the port of Edinburgh. Near the city is the famous bridge over the Firth of Forth.

Glasgow, situated on the Clyde, is the second city in Great Britain and the greatest ship-building centre in the world. It has many splendid buildings and is a most progressive city. *Greenock*, which stretches for some four miles along the Clyde near Glasgow, has large ship-building and manufacturing interests. *Aberdeen*, situated at the mouth of the river *Dee*, is a fishing centre and has large manufactures of cotton and linen.

Princes Street, Edinburgh, Scotland, and Sir Walter Scott's Monument

Dundee, on the *Firth of Tay*, is the centre of the Scottish fishing industry. It has large linen, jute, and hemp factories. *Paisley*, seven miles from Glasgow, is the great centre for the manufacture of thread. It manufactures also tartans, muslins, and carpets. *Inverness*, a small town in the Highlands, has extensive shipyards.

IRELAND

The island of *Ireland* contains two divisions —the *Irish Free State* and *Northern Ireland*. The former is the larger, with an area of 26,600 square miles, while the latter has but 5,300 square miles. The Irish Free State is a British Dominion. Northern Ireland has local self-government, but sends representatives to the Imperial Parliament.

Surface and Coast-line.—The surface of Ireland consists of an interior plain, seldom more than 300 feet above sea-level. Surrounding this plain, in which are many small lakes and bogs, are hills and low mountains near the coast. The mountains abound in wild ravines, bold cascades, and beautiful lakes. The *Lakes of Killarney* yearly attract many visitors by their great natural beauty. The chief rivers are the *Shannon*, with its valuable water-power, on the west, and the *Liffey* and the *Boyne* on the east.

The north coast of the island is bold and rocky. The east coast is generally flat, sandy, and regular, and there are many sand-banks and sunken rocks, which obstruct navigation. The west coast is high, rocky, and, from being exposed to the full force of the Atlantic, much broken and very irregular.

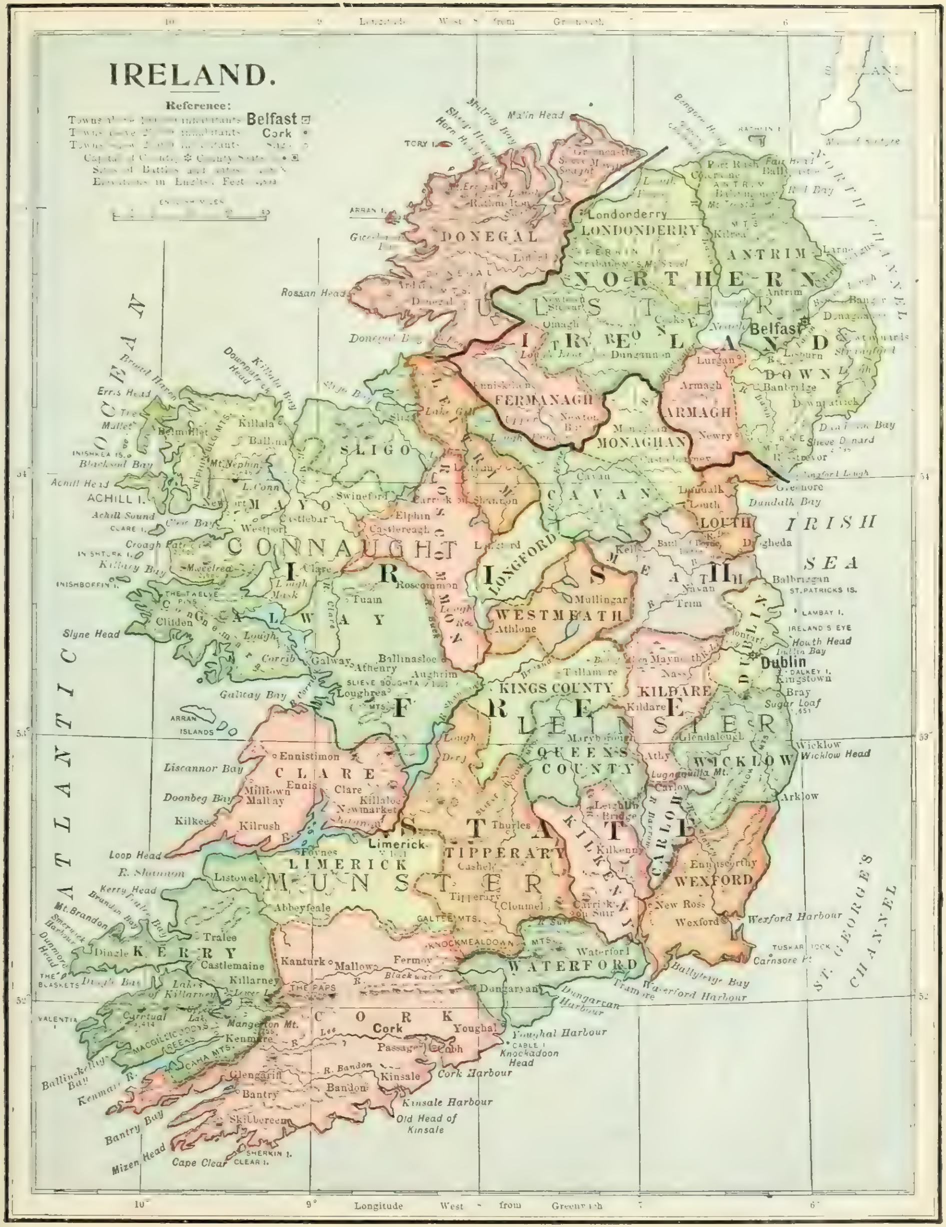
Climate.—The climate of Ireland is more equable than that of England or Scotland. The temperature seldom falls below 40° in winter. The rainfall is abundant and is uniformly distributed.

Industries.—The mild and moist climate of Ireland is peculiarly suited to the growth of excellent grass, so that four-fifths of the agricultural land is devoted to the raising of stock. Bacon, butter, and eggs are exported in large quantities. Oats and barley are grown, as are also potatoes and other vegetables. With the exception of sand-stone, granite, and marble, there is very little mining or quarrying done in Ireland. Peat is used for fuel. Coal is imported from England and Scotland. Ship-building is an important industry in the north.

The chief industry in Ireland, however, is the manufacture of linen, and for this product the Irish factories are famous. The moist climate of Ireland, not too warm, is very favourable both to the growing and to the spinning of flax. Much of the raw material, however, has to be imported from Belgium and Russia, and some from Canada.

Sackville Street, the principal Thoroughfare in Dublin, Ireland

Cities and Towns.—*Dublin*, the capital of the Irish Free State, is situated on the Liffey. It is the centre of the silk and woollen manufactures of Ireland. The University of Dublin, commonly known as Trinity College, is one of the great educational institutions of the British Isles. *Belfast*, the capital of Northern Ireland, is the largest industrial city in the island. It is on the edge of the flax-growing district, and all branches of the Irish linen industry centre there. One of its great industries is ship-building. The city has splendid facilities for launching vessels, and coal and steel are easily brought in from Great Britain. *Cork*, on the river *Lee*, has one of the finest harbours in the world. It exports cattle and provisions, and manufactures woollen goods. Its most famous building is St. Anne's Shandon Church, noted for its beautiful chimes. On an island in Cork Harbour stands *Cobh* (*Queenstown*), where Atlantic liners call with mails to be forwarded by rail across Ireland, by boat across the Irish Sea, and then by rail again to their destinations in Great Britain.


IRELAND.
Reference:
Belfast
Cork
Longitude West from Greenwich
10°
9°
7
6
54
53
52
ATLANTIC OCEAN
NORTH CHANNEL
IRISH SEA
ST. GEORGE'S CHANNEL
NORTHERN IRELAND
IRISH FREE STATE
ULSTER
CONNAUGHT
LEINSTER
MUNSTER
DONEGAL
LONDONDERRY
ANTRIM
TYRONE
FERMANAGH
ARMAGH
DOWN
MONAGHAN
CAVAN
SLIGO
MAYO
LEITRIM
ROSCOMMON
LONGFORD
LOUTH
MEATH
WESTMEATH
GALWAY
DUBLIN
KINGS COUNTY
KILDARE
QUEENS COUNTY
WICKLOW
CARLOW
KILKENNY
WEXFORD
CLARE
LIMERICK
TIPPERARY
WATERFORD
KERRY
CORK
Malin Head
Tory I.
Horn Head
Sheep Haven
Mulroy Bay
Arran I.
Rossan Head
Donegal Bay
Bengore Head
Rathlin I.
Fair Head
Londonderry
Belfast
Lisburn
Lurgan
Armagh
Newry
Banbridge
Downpatrick
Dundrum Bay
Slieve Donard
Carlingford Lough
Greenore
Dundalk
Dundalk Bay
Drogheda
Enniskillen
Monaghan
Dungannon
Omagh
Strabane
Antrim
Larne
Bangor
Strangford
Erris Head
Broad Haven
Killala Bay
Killala
Ballina
Belmullet
Inishkea Is.
Blacksod Bay
Achill Head
Achill I.
Achill Sound
Clare I.
Clew Bay
Westport
Castlebar
Croagh Patrick
Inishturk I.
Killary Bay
Inishboffin I.
Mweelrea
Mt. Nephin
L. Conn
Sligo
Sligo Bay
Lough Gill
Swineford
Elphin
Castlereagh
Carrick on Shannon
Longford
Roscommon
Tuam
Lough Mask
Lough Corrib
Clifden
Slyne Head
Galway
Galway Bay
Athenry
Ballinasloe
Aughrim
Slieve Boughta
Loughrea
Athlone
Mullingar
Kells
Navan
Trim
Balbriggan
St. Patricks Is.
Lambay I.
Ireland's Eye
Howth Head
Dublin Bay
Dublin
Clontarf
Kingstown
Dalkey I.
Bray
Sugar Loaf
Maynooth
Naas
Kildare
Tullamore
Maryborough
Athy
Glendalough
Lugnaquilla Mt.
Wicklow
Wicklow Head
Wicklow Mts.
Arklow
Carlow
Leighlin Bridge
Kilkenny
Enniscorthy
New Ross
Wexford
Wexford Harbour
Tuskar Rock
Carnsore Pt.
Ballyteige Bay
Waterford Harbour
Tramore
Waterford
Dungarvan
Dungarvan Harbour
Carrick on Suir
Clonmel
Tipperary
Cashel
Thurles
Lough Derg
Arran Islands
Liscannor Bay
Ennistimon
Ennis
Clare
Killaloe
Newmarket
Milltown Malbay
Doonbeg Bay
Kilkee
Kilrush
Loop Head
R. Shannon
Foynes
Limerick
Listowel
Abbeyfeale
Kerry Head
Brandon Bay
Mt. Brandon
Tralee
Tralee Bay
Smerwick Harbour
Dunmore Head
The Blaskets
Dingle
Dingle Bay
Castlemaine
Killarney
Lakes of Killarney
Carrantual
Macgillicuddy's Reeks
Mangerton Mt.
Kenmare
Kenmare R.
Caha Mts.
Valentia
Ballinskelligs Bay
Glengariff
Bantry
Bantry Bay
Skibbereen
Mizen Head
Cape Clear
Clear I.
Sherkin I.
Galtee Mts.
Knockmealdown Mts.
Kanturk
Mallow
Fermoy
Blackwater
The Paps
Cork
R. Lee
Passage
Cobh
Youghal
Youghal Harbour
Knockadoon Head
Cork Harbour
Kinsale
Kinsale Harbour
Old Head of Kinsale
R. Bandon
Bandon

Limerick, on the Shannon, is the market and port of a fine farming country. It manufactures lace and gloves, and exports bacon, butter, and eggs. *Londonderry*, on the west bank of the *Foyle River*, manufactures linen, and exports farm produce.

NORWAY

Position, Extent, and People.—The kingdom of *Norway* occupies the western and north-western parts of the *Scandinavian Peninsula*. From north to south it extends for over 1,000 miles, varying in width from twenty to 200 miles. Its area is about half as great as that of Manitoba. Its population is small when compared with that of some of the neighbouring countries, as it has but 2,800,000 people.

The Norwegians are an intelligent and industrious people. The hardships and privations of their life on the sea and in the mountains have made them strong and vigorous.

A Norwegian Fiord

Surface.—With the exception of Spain and Switzerland, Norway is the most mountainous country in Europe. The surface slopes from the central mountain range of the peninsula toward the sea and is crossed by many deep, narrow valleys. In the southern part there is a broad plateau, which extends into Sweden. The plateau is dotted with numerous lakes, which are connected with one another and are useful for inland transportation. The mountain slope to the sea is short and steep, so that while there are many rivers, they are useless for navigation. In their course, however, they form falls, which supply valuable water-power. Among the mountains are huge glaciers from which the rivers are fed. One of these glaciers, 300 square miles in area, is the largest in Europe.

The coast-line is very irregular, and all along the coast there are hundreds of small islands. Running far into the land are innumerable inlets, known as *fiords*. These fiords, with their calm waters and precipitous cliffs, either rocky or forest-clad, are perhaps the most striking physical feature of the country.

Climate.—Although Norway lies in the northern part of the North Temperate Zone, the climate is not nearly so cold as might be expected. So much of the country lies along the Atlantic Ocean and the fiords penetrate so deeply into the interior that the climate is affected by the comparatively warm seawater. The prevailing westerlies blow over Norway and bring an abundance of moisture. On the higher elevations in the interior the winters are very severe.

Industries.—Only a little over three per cent of the surface of Norway is suitable for agriculture. Rye, oats, and potatoes are grown. In the valleys and on the lower mountain slopes there is good pasturage. Recently Norway has become a close rival of Canada in the fox-farming industry.

About one-fifth of the country is covered with forests. The pine, the oak, and the beech are the principal trees. The making of wood-pulp is one of the chief industries of the country, the products being shipped mainly to England and the United States.

Norway is rich in minerals, but the mountainous nature of the country, with the consequent difficulty of securing cheap transportation, has hindered the development of the mines. Silver, copper, iron, and gold are the principal mineral products.

The length of the coast-line, the numerous fine harbours along the coast, and the proximity of the Atlantic fishing-grounds make fishing the leading industry of the country. Over 100,000 men are engaged in the coast fisheries, while many others venture into the Arctic Ocean in search of whales and seals. Oyster-beds are found all along the coast. The inland waters, both lakes and rivers, teem with trout and salmon. Salted fish and cod-liver oil are exported.

The manufactures of Norway are numerous and important. On account of the large number of rapid mountain streams, the lack of coal is not so much felt as might be expected. The manufactures include lumber, wooden-ware, wood-pulp, paper, iron, steel, leather goods, glass, pottery, and textiles such as linens, woollens, and cottons. The factories are mainly in the south.

The Norwegians have a large carrying trade. Their ships are seen in all parts of the world, and their sailors help to man the ships of many nations.

Cities and Towns.—The cities of Norway are mainly along the coast. *Oslo* (*Christiania*), the capital and chief industrial city, is situated on a fiord about fifty miles from the open water of the *Skaggerack*. *Bergen* is the most important fish-market of Norway.

SWEDEN

Position, Extent, and People.—The kingdom of *Sweden* occupies the eastern and larger portion of the Scandinavian Peninsula. It is somewhat larger in area than Norway and contains more than double the population.

Surface and Climate.—The surface is much less mountainous than that of Norway. It consists of a series of rolling uplands, falling in steps toward the sea. Numerous lakes, some of them very large, are scattered over the surface. There are also many rivers, useless for navigation, but, like those of Norway, valuable for water-power. The coast is indented with fiords running far into the land, forming many good harbours.

The climate is much more severe than that of Norway, and the rainfall is less. The heaviest rainfall is on the southern plain.

Industries and Trade.—More than half of the surface of Sweden is covered with northern forest, which has given rise to a great lumber, wood-pulp, and paper industry. There are many saw-mills, furniture factories, and pulp and paper mills located at convenient points all over the country. The making of matches is a thriving industry.

Less than a tenth of the soil of Sweden is adapted to agriculture, yet over half the people are engaged in that industry. Stock-raising and dairying are of great and growing importance. Butter, bacon, hides, and wool are exported. Oats, rye, barley, and sugar-beets are the principal crops. In the northern section of the country the summers, like those of our Yukon Territory, are very short, but the long, hot days cause a very rapid growth.

Very valuable iron mines are found in Sweden. Much of the ore, on account of the lack of coal for smelting, is exported to Great Britain, but still there are hundreds of smelters in operation. Zinc, copper, and gold are also mined.

Many of the Swedes are engaged in the herring fisheries of the Baltic. Flour, sugar, woollen and cotton goods, machinery, and steel products are the leading manufactures. Inland trade is easily carried on by means of lakes and canals. The country has nearly nine times as many miles of railway as Norway.

Cities and Towns.—*Stockholm*, the capital and largest city of Sweden, is picturesquely situated upon islands in *Lake Malar*. The harbour is excellent, but is ice-bound in winter. *Göteborg* (*Gothenburg*), on the *Kattegat*, connected with the capital by rail and canal, has a large shipping trade.

DENMARK

take

Position, Extent, and People.—Included in the kingdom of *Denmark* are the greater part of the *Jutland* peninsula, the *Faroe Islands,* and a number of islands in the *Baltic Sea,* the largest of which are *Zealand* and *Fünen.* In area Denmark is four-fifths of that of Nova Scotia, and the population is a little larger than that of Ontario.

The Faroe Islands are a group of twenty-two small islands in the Atlantic Ocean to the north of Scotland. They are sparsely populated. They supply the mother-country with wool, mutton, and fish. *Greenland,* in North America, belongs to Denmark.

Surface and Climate.—The surface of Denmark is low and flat, with gently rolling areas. It contains many marshes, small ponds or lakes, and peat bogs. The streams are short and not rapid. The western side of the peninsula has a low sandy shore, with lagoons inclosed by sand-bars. On the eastern side the coast is higher, with a few safe harbours for small vessels.

As Denmark lies within the path of the prevailing westerlies, there is plenty of rain at all times of the year. Generally, however, these rains are raw and misty, so that the climate is frequently cold and unpleasant.

Industries.—Large sections of Denmark are too sandy and boggy for purposes of agriculture, but there is much fertile land, especially in the eastern part and on the islands. The climate is too cool and damp for the cultivation of any but the hardier grains, such as barley, rye, and oats. Both soil and climate, however, are ideally suited to pasturage, so that dairying is the chief industry. Millions of pounds of butter and millions of dozens of eggs are shipped annually to Great Britain. Pork-packing and horse-breeding are also of prime importance.

The Danes have always been a maritime people. They have a large commercial fleet of their own, manned by their own sailors, while many others find employment on the ships of other nations. Many are also engaged in the shore fisheries. As there is neither coal nor iron to be found, manufacturing is not so important an industry as it is in Sweden. The presence of many beds of clay of a very fine quality has led to extensive manufactures of pottery and porcelain. Fuel has to be imported, but some use is made of the numerous peat bogs on the western side of the peninsula.

The Harbour of Copenhagen, Denmark

Cities and Towns.—The capital is *Copenhagen,* on the island of Zealand, a very beautiful and interesting city, with large manufacturing interests and trade connections. *Aarhus,* the second city in size, on the east coast, and *Odense,* on the island of Fünen, are other important places.

ICELAND

Iceland, for centuries a dependency of Denmark, is now a separate nation, with the king of Denmark as its constitutional head. The people of Denmark and Iceland are closely akin, and the most friendly relations exist between the two nations. Although Iceland is more than twice the size of Denmark, there are only about 105,000 people on the island. Emigration has had much to do with the smallness of the population. Thousands of Icelanders have, in recent years, left their island home and made for themselves new homes in the Canadian West, where they have proved to be most valuable settlers.

Iceland is very mountainous, and is noted specially for its volcanoes, geysers, and hot springs. *Mount Hecla* is in continuous eruption. In winter the climate is very cold, and in summer it is not very warm. Formerly the island was covered with forests, but these long since were cut down, so that sometimes the inhabitants suffer severely for want of fuel. There is good pasturage on the island, and large numbers of sheep and ponies are shipped yearly to Scotland and England. There are herds of reindeer running wild, but no attempt has been made to domesticate them. Many of the Icelanders are engaged in the fisheries, cod and herring being the principal fish caught. The down from the eider-duck is an important article of export. *Reykjavik* is the capital and chief city.

THE NETHERLANDS

Position, Extent, and People.—The kingdom of the *Netherlands* (Low Countries) is also known as *Holland*, from the name of one of its provinces. Though measuring only 150 miles from north to south and 120 miles from east to west, it is one of the most important commercial countries in Europe.

The *Dutch* were among the most daring and successful of the early navigators and discoverers. Dutch seamen penetrated into every sea and claimed for their country many parts of the newly discovered lands. Some of the fairest of these colonies have been lost, but enough remain to add materially to the wealth of the parent country. In the East Indies the Dutch hold some of the largest and richest of the islands. They own, also, *Dutch Guiana*, in the northern part of South America, and two small groups of islands in the West Indies. Four-fifths of the trade of these colonies is with the home-land.

A Scene in Holland

Notice that the village is behind the dikes and below sea-level.

Surface and Climate.—The surface of the Netherlands is a dead-level plain, in parts below sea-level. There are low elevations in the eastern, northern, and central parts of the country. Along the coast runs a long line of sand-dunes from thirty to one hundred feet in height.

The coast of the Netherlands for many miles consists of low, marshy swamps, formed by the sand and silt brought down by the Rhine and other rivers. These marshes have been drained by the Dutch, and huge embankments, or dikes, have been built to protect them from the sea. The land thus formed is kept free from water either by windmills or by modern steam or electric pumps. Hundreds of canals have been dug to connect the numerous rivers which flow through the plain.

The climate, owing to the nearness of the sea, is comparatively mild. The prevailing westerlies bring plenty of moisture. The frequent heavy sea fogs are very disagreeable and are injurious to the growth of the crops.

Industries. — About two-thirds of the Netherlands is devoted to agriculture, gardening, and pasturage. Wheat, rye, flax, and vegetables, including the sugar-beet, are the principal crops. The Dutch gardens are beautiful. The flowers are grown not only for the home market, but also for the seeds and bulbs, in which a large export trade is carried on. But it is in the live-stock and dairy-farming industries that the Dutch excel. Immense quantities of butter, cheese, poultry, and eggs are exported to neighbouring countries, especially to Great Britain.

The present-day Dutch, like their ancestors, are a maritime people. Fishing is a leading industry. The principal fish caught is the herring. Oysters are also obtained in great quantities.

The manufactures of the Netherlands are very extensive. The raw materials are easily obtained from Great Britain and near-by countries in Europe, and from the Dutch colonies abroad. The windmills, driven by the strong and steady winds usual in the Netherlands, provide power for many of the factories. Dutch linens, woollens, paper, and pottery, have long been famous. Other manufactures are silk, velvet, sugar, cocoa, chocolate, and tobacco pipes. Ship-building is a very important industry.

Internal communication in the Netherlands is easy on account of the canals. When they are frozen over in the winter, they can be used as roads. The flat tops of the dikes and embankments of the canals make excellent wagon roads. Railways are not so necessary as they are in most other countries, but still there are about 2,400 miles in operation.

Cities and Towns.—The capital of the Netherlands, *The Hague*, stands about two miles from the North Sea. It is a beautiful city, with a celebrated art gallery. *Rotterdam*, situated on both sides of the *Meuse River* twenty miles from its mouth, is the chief commercial city of the Netherlands and one of the greatest ports of the world. Its chief trade is in the products of the Dutch colonies in various parts of the world. *Amsterdam*, built on a group of swampy islands at the south end of the *Zuiderzee*, is the largest city. It is built on piles, and the islands are connected by hundreds of bridges. Amsterdam has large commercial and manufacturing interests and is the world centre of the diamond-cutting industry.

BELGIUM

Position, Extent, and People.—*Belgium* is little more than half as large as Nova Scotia, and yet it contains almost as many people as the whole of Canada. Belgium is so densely populated that the whole country may be said to be one very large city. Here live more people to the square mile than in any other country in the world.

Belgium controls a large section of the basin of the *Congo River* in Africa. This possession is of great value, not only as a market for her manufactured goods, but also for its trade in rubber, ivory, and other tropical products.

Surface and Climate.—The surface in the northern and western parts is low and flat, intersected by many small, sluggish streams. Some of the land has been reclaimed from the sea and is protected by dikes. In the south and east the country rises gradually and becomes rolling and hilly. On the low, sandy coast of forty-two miles there is only one good harbour, Ostend. As Belgium lies in the path of the prevailing westerlies and is so near the sea, there is always plenty of moisture. The climate on the whole is equable, although in the northern sections the winters are raw and chilly.

Industries.—The farmers of Belgium are very industrious and make the most of the soil. Large crops are produced, yet even with more than half of the population engaged in farming, much food has to be imported. The principal crops are wheat, rye, oats, sugar-beets, and garden vegetables.

Selling Milk, Belgium

Flax is grown for its fibre. In the drier sections, cattle, horses, sheep, and poultry are raised.

The chief manufacturing district of Belgium is the forest-clad, hilly region in the south-east. Here coal and iron mines are found close together. This part of the country rivals the Birmingham district of England in the extent of its iron and steel works. Much coal and coke are exported. In this part, also, silver, lead, and zinc are mined.

But the manufactures are not confined to iron and steel, nor are all the large factories in the hilly section. The rivers and canals are so numerous and the railways so excellent that the transportation of coal and raw materials within the kingdom is very easy. Consequently, there are, throughout Belgium, large cotton, woollen, cloth, and linen mills, as well as glass, carpet, and glove factories.

The position of Belgium in Europe gives her many trade advantages. Not only has she a large carrying trade with the countries of the interior of the continent, but she has in these countries a convenient market for the sale of her products.

Cities and Towns.—*Brussels*, the capital, in the heart of the kingdom, has important manufactures, particularly of lace and carpets. *Antwerp*, though not on the sea-coast, has such a magnificent harbour on the *Scheldt River* that it is one of the largest seaports in Europe. It has railway communication with all parts of the continent. The most important manufacturing city is *Liége*, situated in the centre of the iron and coal districts. *Ghent*, at the junction of the *Lys* and the Scheldt, is noted for its linen and woollen factories. *Ostend*, on the coast, is a fishing-station, with a large shipping trade.

LUXEMBURG

The grand duchy of *Luxemburg* is a small country of only about 1,000 square miles, entirely surrounded by French, Belgian, and German territory. It has a population of 285,000, mainly of German descent. Valuable mines of iron ore are worked, and there is an important industry in the manufacture of iron and steel. Wine, vinegar, and pottery are also manufactured. Fruits and vegetables are exported. The capital is *Luxemburg*, a small city, but with important manufactures of steel goods and clothing.

FRANCE

Position, Extent, and People.—The republic of *France* has a most favourable situation on the western side of Europe. On the eastern side it adjoins Belgium, Germany, Switzerland, and Italy, while the *Pyrenees Mountains* on the south separate it from Spain. On the north, across the *English Channel* and the *Strait of Dover*, lies Great Britain. Off the west coast is the *Bay of Biscay*, and off the south coast the *Mediterranean Sea*. In area it is a little more than half as large as Ontario, and it has a population about four times as great as that of the whole of Canada.

At the close of the Great War, in order to compensate France for the destruction of her coal and iron mines in the north-east, the mines of the Saar Basin on the German border were handed over to her. The district itself, however, is under the control of the League of Nations.

Colonies.—France has many important colonial possessions. Among these are *Morocco*, *Algeria*, *Tunis*, the *Sahara*, *French Western* and *Equatorial Africa*, and *Madagascar* in Africa; *French Indo-China*; some small places in India; the *St. Pierre* and *Miquelon* groups of islands near Newfoundland; *Martinique* and *Guadeloupe* in the West Indies; *French Guiana* in South America, and a number of small groups of islands in the Pacific Ocean, including *New Caledonia*. These colonies are of great value to France as a market for her home products, and as a source of supply for raw materials for her factories.

Shepherds with their Flocks, The Landes, France

Surface and Climate.—Northern and north-western France lie in the great plain of Europe. This plain is drained toward the west by the *Seine* and its tributaries, the *Marne* and the *Aisne*. The larger part of Central France is a plateau, rising steeply from the west side of the Rhone Valley and sloping toward the Atlantic Ocean. East of the Rhone Valley are the *Jura Mountains* and the *Alps*. At the north end of the *French Alps* is *Mount Blanc*—the highest peak in Europe. Along the south-western coast is an area of shifting sand known as the "landes." The winds are constantly carrying this sand farther and farther inland.

The great rivers of France are the *Seine* and the *Rhone*. Their valleys form routes of trade from rich industrial regions to important ports. The *Loire* and the *Garonne*, flowing from the central plateau, are smaller streams. Their head-waters are so interlocked with neighbouring rivers that they have been linked together by canals in a net-work of waterways. These waterways are a great aid to the internal trade of the country.

France lies on the windward side of the continent, and hence the climate, in general, is moist and never severely cold, except in the mountains. East of Marseilles the winter climate is warm and delightful. The mountains protect this region from the cold winds of the north, and the warm waters of the Mediterranean wash its shores.

Agriculture.—Nearly half the people of France are engaged in farming. For the most part the farms are small and are cultivated by those who own them.

In the northern plain, in the valleys of the Loire and the Rhone, and in Alsace-Lorraine, wheat is the principal crop. Rye, barley, and oats are grown on the poorer soil. Potatoes for the making of alcohol, much used as a fuel, and sugar-beets are cultivated where the soil is favourable. The raising of horses is a profitable industry, especially in *Normandy* in the north-west. From there comes the Percheron, so familiar as a draft-horse in this country. Cattle, sheep, swine, and mules are also raised in large numbers. Dairying is especially important in the north.

In central and southern France the countryside is covered with vineyards. More grapes are grown there than in any other country in Europe. The warm climate and rich soil are equally suited to the growth of the mulberry tree, on which the silk-worms feed. In the region along the Mediterranean Sea, and in the southern part of the valley of the Rhone, oranges, lemons, olives, chestnuts, and walnuts are grown.

Herding Sheep near Marseilles, France
Compare the herding with that in the illustration above.

Mining.—The chief mineral wealth of France lies in its coal and iron fields. The iron deposits are enormous and are distributed over the country. In addition to its own coal mines, France controls certain coal-fields in Germany, the output of which is large. The result is the growth of an important iron and steel industry. France stands next to the United States in the production of aluminium. There are oil-fields in certain districts and also immense deposits of potash. Salt is found in abundance. Fine clays, used in the manufacture of china and pottery, and building-stone of a superior quality are other valuable products.

A Vineyard on a Hillside, France

Fishing.—Fish is one of the staple foods of the French people. In the early days of Canadian history, the French fishermen were in the habit of visiting the Grand Banks of Newfoundland. They still go there, using as their base the small island groups of St. Pierre and Miquelon. Most of the fish caught, however, come from the fishing-grounds of the North Sea. There are valuable oyster-beds along the coast of the Bay of Biscay, and sardines are caught in immense quantities both in the Bay and along the shores of the Mediterranean. France has a large export trade in canned sardines.

Lumbering.—Almost one-seventh of the surface of France is covered with trees. Many of these, such as the mulberry, the chestnut, the walnut, and the olive, are cultivated trees, but there are many large forests containing oak, elm, beech, and pine, from which timber is obtained. The forests are carefully supervised, and reforestation, that is, the planting of seedlings in areas which have been cut over, is insisted upon.

Manufacturing.—France has always been famed for the quality as well as the quantity of its manufactured products. The largest manufacturing centres are near the coal-fields. Electric power, generated from the mountain streams, is more and more coming into use in the factories.

The most important manufactures are silks, cottons, and wines, although there are large woollen, linen, and carpet factories and many iron foundries and steel-mills. The people of France have a natural appreciation of grace and beauty, and so they have specialized in jewellery, fine china, laces, ribbons, gloves, hosiery, dresses, hats, and similar articles that require artistic skill and care in the making.

Cities and Towns.—The cities of France are numerous and important. *Paris,* on both sides of the Seine River just below its junction with the *Marne,* is the capital and largest city. It lies in the midst of the most fertile district of France. Railways radiate

A beautiful Street in Paris, France

from it in all directions, and canals connect the Seine with other important rivers. It has no difficulty in procuring raw materials, both from foreign countries and from the neighbouring districts in France, so that it is one of the great manufacturing cities of the world. It is a very beautiful city, with wide streets, boulevards, and parks, with beautiful churches, such as the Cathedral of Notre Dame, art galleries, such as the Louvre, handsome public and private buildings, triumphal arches and monuments. Paris is the political, industrial, literary, scientific, and artistic centre of France. Near the city is *Versailles*, which contains the magnificent palace and pleasure grounds of the former kings of France. While small sea-going vessels can proceed up the Seine as far as Paris, the larger ships have to unload their cargoes at either *Le Hâvre* or *Rouen*. The latter is a flourishing port, with miles of docks. It is also a centre for the manufacture of cotton. *Boulogne* and *Calais* on the Strait of Dover have large trade connections with England. *Toulouse* and *Bordeaux* on the Garonne are important cities. The former is situated in the midst of a rich agricultural country, and the latter is famous for its wine and for its steel and other manufactures. *Lyons* is the leading silk city, and *Limoges* is equally celebrated for its china. *Marseilles*, one of the busiest ports on the Mediterranean, has large steel-mills and soap-works. *St. Étienne* also is famous for its steel and for silk. *Lille*, near the north-eastern coal-fields, has large linen and cotton factories. *Strasbourg*, on a tributary of the Rhine, is a flourishing industrial city, with a large domestic and forwarding trade. *Reims*, in the north-east, has many woollen factories. It is celebrated for its cathedral, which dates from the thirteenth century. *Nantes*, on the Loire River, is the chief sugar-manufacturing city. *Toulon*, on the Mediterranean, is a thriving port.

The Promenade at Nice, France

The Riviera.—The ancient cathedrals and historic ruins of France and her far-famed museums and art galleries attract many travellers. Tourists often spend the winter on the *Riviera*, as the south-eastern coast of France and the adjoining ~~district in Italy~~ are called. The Riviera is so beautifully situated and has such a delightful climate that it is almost like a bit of the tropics dropped down on the shores of the Mediterranean. *Nice*, famous as a health resort, is the principal city in this lovely section of France.

Corsica.—Lying off the west coast of Italy is the French island of *Corsica*, famous as the birthplace of the Emperor Napoleon I. It is somewhat larger than Prince Edward Island and has a population of over 300,000. The surface is mountainous and densely forested. All over the island grow the olive and the chestnut, the nuts of the latter being the chief food of a large part of the population. Wine and olive oil are exported. Much timber is sent abroad, and there are many marble and alabaster quarries. Coral is collected along the coast. *Ajaccio*, on the west side of the island, is the chief town.

Monaco and Andorra.—The principality of *Monaco* is situated on a promontory, which juts out into the Mediterranean about nine miles from Nice. It has an area of eight square miles and a population of 25,000. The capital is *Monaco*. Its suburb, *Monte Carlo*, is the great gambling resort of Europe. The principality is under the control of France. The tiny republic of *Andorra*, situated on the south side of the Pyrenees, is also under the protection of France. Most of the people are farmers or shepherds.

SWITZERLAND

Position, Extent, and People.—The confederation of *Switzerland* is one of the few inland countries of Europe; at no point does its territory touch upon the sea. It is a mountainous country, a little more than half as large as New Brunswick.

Like most mountaineers, the people of Switzerland are devoted to their homes and to their country. They are, for the most part, strong in body, cheerful and happy in their homes, good farmers, and excellent workmen. If they were not so, they could not support themselves within the rugged, mountainous districts where they dwell.

Surface and Climate.—About half of Switzerland is occupied by mountains. Between the *Jura Range* on the north-west and the *Alps* on the south, is a valley, sometimes called the *Lowlands*. This is the chief agricultural section, and here are situated all the larger cities and towns. Many large rivers have their sources in Switzerland, but in their course through that country they are so steep and rapid as to be useless for navigation. Many of the beautiful mountain lakes, such as *Geneva*, *Lucerne*, and *Constance*, are of importance as internal waterways.

An Alpine Village, Switzerland

Fortunately for Switzerland, there are many passes through the mountains that form a barrier around the country. Railways are thus enabled to enter with little difficulty. The Swiss realize how important railways are, and, where there is no natural pass, they have tunnelled through the mountains. Two of these tunnels, for railways connecting with Italy—the *St. Gothard* and the *Simplon*—are the longest in the world. The latter is over twice as long as the Connaught tunnel on the Canadian Pacific in the Selkirk Mountains of British Columbia.

The prevailing westerlies blow over Switzerland, thus ensuring a heavy rainfall and snowfall. Much depends, of course, upon the altitude. The snow lies upon the Alps all the year round at a height of about 9,000 feet. In the valleys there is a pleasant summer climate, caused by warm, dry winds from the south.

Industries.—Although there is little land in Switzerland suitable for cultivation—about one acre in ten—agriculture is one of the chief occupations of the people. Wheat, barley, oats, and vegetables are raised, and, on the sunny hillsides in the lowlands, grapes and the mulberry tree. Most important of all is the dairy industry. The cattle and goats pasture in the lowlands in winter, and, as the snow melts in summer, they are driven up the mountain-sides to feed on the luxuriant grass on the slopes. In this way valley grass is saved to provide hay for the winter.

Almost one-half of the people of Switzerland are engaged in manufacturing. Although there is very little coal, this scarcity is more than made up for by the water-power provided by mountain streams. There is little raw material, but the nearness of the country to France, Germany, Austria, and Italy makes it easy to import whatever is needed. But the principal reason for the success of Switzerland as a manufacturing country is to be found in the people themselves. The Swiss are shrewd and industrious, tireless workers, and unusually skilful. They manufacture articles light in weight and easily handled, which find a ready market throughout the world.

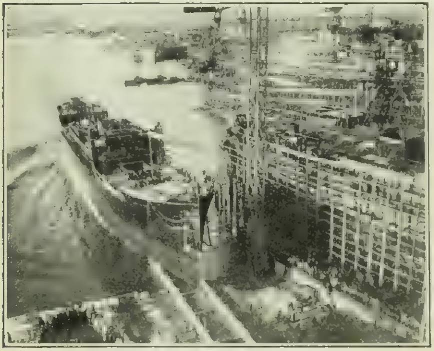
The Swiss are noted particularly for their wood-carving, jewellery, toys, lace, embroidery, and plaited straw goods. Much of the labour is done in the homes of the people, who take a pride in their work. The skins of the goats and kids are used for the manufacture of gloves. Cotton, for which the raw material is imported, and silk are the chief textiles. Swiss clocks and watches are famous for their excellence. Butter, cheese, milk chocolate, and condensed milk are leading articles of export.

Switzerland is celebrated all over the world for its wonderful scenery—giant mountains, immense glaciers, beautiful streams and lakes. In consequence, there is a steady stream of visitors to this "playground of Europe" during both the summer and the winter months. Thousands of Swiss find employment in taking care of this small army of tourists. Indeed, the "tourist industry" is one of the most important in Switzerland.

Cities and Towns.—*Bern*, the capital, *Zurich*, the largest city, *Basel*, and *Geneva* are busy manufacturing and commercial centres. The latter city is noted for its educational institutions. It is now the official meeting-place of the representatives of the League of Nations.

GERMANY

Position, Extent, and People.—The republic of *Germany* occupies a large portion of the western part of the great plain of Europe. Its territory touches upon that of eleven nations, while both the *Baltic* and the *North Sea* border its shores. In area the country is not quite half as large as Ontario, but the population is over twenty times as great.



The Shipyards at Bremen, Germany

Surface and Climate.—Northern Germany is an extensive plain, sloping toward the Baltic and the North Sea. The surface is rolling, with low hills and numerous small lakes. As it approaches Holland, however, the plain is low and flat. In the centre and the south the country becomes a plateau with high hills and forest-clad mountains. In the extreme south is a part of the northern slope of the Alps, with many lofty peaks.

The greater part of Germany is drained into the Baltic and the North Sea. The principal rivers are the *Oder*, which flows into the Baltic, and the *Elbe*, the *Weser*, and the *Rhine*, which empty into the North Sea. The *Danube* and the Rhine drain the southern section. In addition, Germany possesses a most remarkable system of artificial waterways. Canals connect the Rhine with the Seine, the Rhone, and the Danube, while there is a waterway between the Elbe and the Vistula. Most important of all, to avoid the long voyage around the north coast of Denmark, the Germans built the *Kiel Canal*, fifty-three miles long, across the narrow neck of land which separates the Baltic from the North Sea.

The prevailing westerlies temper the climate of the western part of the northern plain. As the distance from the sea increases, the winter temperature is lower. The German ports in the North Sea are open all the year, but those on the Baltic are frozen for several months during the winter. Southern Germany, in spite of its more southern latitude, has about the same climate as the northern part, on account of its elevation. The summers, however, are warmer than those in the north. The rainfall, while abundant in the western section, decreases toward the east. Everywhere there is sufficient moisture for agriculture.

Agriculture.—Germany is, above all, an agricultural country, about half of its total area being suited to the raising of crops. In many districts of the north the soil is light. These parts are devoted to the raising of rye, potatoes, and sugar-beets. The grassy lowlands of the north have been given up almost entirely to the cattle-raising and dairying industry. In the valley of the Rhine all the cereals of the Temperate Zone are grown. This is the richest agricultural district of Germany, with fertile soil and a warm, moist climate. Hops, tobacco, and fruits, especially grapes, grow luxuriantly. The vineyards of the Rhine valley are famous; the terraced hillsides covered with vines are a sight not soon forgotten. Over the whole country, rye—much used by the people in the making of bread—potatoes, sugar-beets, wheat, and barley are the principal crops. Everywhere much attention is paid to the raising of horses, sheep, cattle, and poultry, and to the making of butter and cheese. Hogs are pastured in the forests, where they feed on the beech-nuts and acorns, and in the beet-sugar districts, where they live on the beet-pulp refuse from the factories.

A Pontoon Bridge over the Rhine at Cologne, Germany

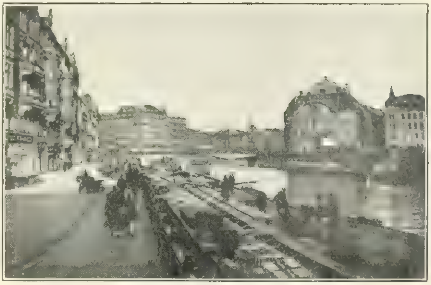
Lumbering.—The forested area of Germany is large. The principal trees are fir, pine, spruce, beech, and oak. A large part of the timber obtained from the forests is used in the manufacture of toys, but much is used in the making of wood-pulp and paper.

Mining.—Germany contains enormous deposits of coal and iron. These deposits are found close together and close to navigable streams. Zinc, silver, copper, and salt are also mined. Potash, much used as a fertilizer, is found in large quantities in the highlands, and there are many districts where valuable clays, used in the manufacture of china and porcelain, are obtained.

Manufacture and Trade.—When her valuable natural resources are taken into account, supplemented by her railways and canals, it is evident that Germany is a great manufacturing country.

The range of manufactures is wide. Machinery, cutlery, and hardware are turned out in amazing quantities. The building of steel ships is also an important industry. The list of other commodities manufactured in Germany is so long that it would be useless to enumerate them all, but among the best known are beer, beet-sugar, paper, textiles, silk, toys, china, dyes, drugs, chemicals, electrical and musical instruments, jewellery, chocolate, and tobacco. The wine industry of the Rhine district is a thriving one.

Cities and Towns.—*Berlin* is the capital and largest city. It lies in the centre of the great northern plain between the Oder and the Elbe, and from it radiate in all directions the railways with which Germany is covered. It has a large number of factories, museums, and art galleries, and many magnificent public and business buildings.



A Street along a Canal, Berlin

Hamburg, the city second in population, is situated near the mouth of the Elbe. It is the most important seaport in Northern

Europe and has excellent docks and docking facilities. *Stettin* and *Kiel* share with Hamburg a great industry in the building of ships. At *Essen* are located the famous Krupp steel works. *Bremen*, on the Weser, has an excellent harbour and a large shipping trade. *Dresden*, on the Elbe, is noted for its museums and art galleries and for the manufacture of china. At *Cologne* is a famous Gothic cathedral—one of the most beautiful Christian churches in the world. This city, which is situated on the Rhine, has large industrial and commercial interests. *Munich*, on a small tributary of the Danube, is a railway centre, with large art factories and art galleries. *Nuremburg* is the centre of the great toy industry of Germany.

Germany possesses many excellent universities. Among the most famous are those at *Leipzig*, *Jena*, and *Heidelberg*. Leipzig is also the seat of the supreme law courts of Germany.

AUSTRIA

Position, Extent, and People.—The republic of *Austria* lies in the interior of Europe. It is very little larger than New Brunswick, with a population about three-fifths of that of Canada. The people are mainly of German descent.

Surface and Climate.—The surface is varied. The eastern part is Alpine, with rugged mountains, deep valleys, and dense forests at the bases of the hills. The mountain scenery of *Tyrol*, one of the Alpine provinces, is unsurpassed in Europe. The remaining part includes the plain on both sides of the *Danube*. The summers are warm, and the winters are cold. The summer climate is favourable to the growing of grains and vegetables, although the plain of the Danube has but a light rainfall.

Industries.—Scattered through the mountain districts are many fertile valleys, and in these and on the plains agriculture is carried on. The chief products are rye, oats, sugar-beets, grapes, and potatoes. Austria, however, does not grow enough grain and vegetables to feed her people. Cattle and sheep are raised. The forests contain valuable timber. Iron, coal, copper, lead, and mercury are mined, but not in large quantities. The numerous mountain streams provide electric power, so that there are many manufactures, the principal being glass, porcelain, lace, silk, iron and bent-wood furniture, paper, matches, and musical and surgical instruments. The smelting and refining of minerals employ a large number of people. Austria is shut out from the sea, but has the free use of the Danube for trade purposes.

Cities and Towns.—*Vienna*, the capital and chief city, with a population of about 1,860,000, is delightfully situated on the Danube. Its museums and art galleries are famous. It is also a commercial and industrial centre with many manufactures. All the important railways connecting Germany with Italy and with the Balkans pass through Vienna, as does also the commerce of the Danube. *Graz*, in the mining district, *Linz*, on the Danube, and *Innsbruck*, in the Alpine region, are the other chief towns.

HUNGARY

Position, Extent, and People.—The kingdom of *Hungary* is an inland country, but it enjoys the free use of the Danube. It is a little larger than Austria in both size and population. The *Hungarians*, or *Magyars*, are the descendants of an Asiatic tribe which settled in Hungary over a thousand years ago. The throne is vacant, but the powers of the monarchy are exercised by a regent.

Surface and Climate.—The surface is an undulating plain, drained by the Danube and its tributaries, with mountains on the north and the east. The climate is subject to sudden changes. The winters are cold, and the summers, especially on the plain, are very hot and dry. The mountain districts are well watered, but on the lowlands there are frequent prolonged droughts.

Industries.—Agriculture is the principal occupation of the people. The soil is fertile, and, except in dry seasons, produces good crops of wheat, corn, sugar-beets, potatoes, grapes, and tobacco. There are great tracts of grazing land, upon which cattle, horses and sheep are raised. Swine, fed on corn, barley, and potatoes, are raised in such large numbers that there is a considerable export of lard and bacon. Poultry-farming is rapidly becoming a leading industry, and dairy-farming is of growing importance. Considerable lumbering is carried on in the foot-hills of the mountains. There is but little mining. The chief manufactures are flour-milling, brewing, tanning, soap-making, sugar-refining, and tobacco. There are also a few iron and steel works, and factories where electrical goods are made.

Cities and Towns.—*Budapest*, the capital and largest city, is made up of two cities, *Buda*, on the high western bank of the Danube, and *Pest*, on the low land on the opposite side of the river. The city is favourably situated at the point where the Danube issues from the *Carpathian Mountains*, just on the border of the great agricultural plain. The city is noted for its municipal markets. The principal manufacture is flour.

Budapest, Hungary

CZECHO-SLOVAKIA

Position, Extent, and People.—The people of the republic of *Czecho-Slovakia* are mainly of the Slavonic race—*Czechs* and *Slovaks*. There are, however, many Germans and Magyars among the inhabitants. The country is a little larger than the Maritime Provinces and has a population of over 14,000,000. Like Austria and Hungary, it is shut in from the sea. It has, however, in common with other countries, the free use of the *Danube*, the *Oder*, and the *Elbe Rivers*, and privileges in various harbours, such as Trieste, on the Adriatic Sea, and Hamburg.

Surface and Climate.—The surface is a hilly plateau, surrounded on the west, north, and north-east by mountains. There is also a hilly region in the south-east. From the plateau the Danube gives Czecho-Slovakia access to the Hungarian plain, while the Elbe gives connection with the plain of Germany. The climate is affected by both the elevation of the surface and the distance from the sea. As in the surrounding countries, the summers are hot and the winters cold. There is plenty of rain in the mountain districts, but not so much on the plateau itself.

Industries.—Czecho-Slovakia raises enough food to maintain her population. There is much fertile land in the mountain valleys and on the plain also, and wheat, corn, hops, barley, beets, and tobacco are raised. There are also large tracts of excellent grazing land. Almost unlimited water-power has greatly aided the growth of large manufacturing industries. Breweries, flour-mills, and sugar factories are in operation at many places. The hides and skins from the cattle and sheep are used in the manufacture of leather and leather goods. Lumbering is carried on in the forests which clothe the bases of the mountains, and the timber is turned into furniture, wood-pulp, and paper. The presence of kaolin and other clays has made possible the china, porcelain, and glass industries. Bohemian glass, named after the rich province of *Bohemia* in the north-west, has been famous for centuries. The *Carpa-*

thians yield iron, coal, graphite, gold, and silver. As the coal and iron are found close together, Czecho-Slovakia has become a great steel country. There are many cotton, woollen, and linen factories, and small, fancy articles are made in the homes of the people.

Cities and Towns.—The capital is *Prague*, an ancient city on the *Moldau River*, a tributary of the Elbe, in the midst of the most productive part of the country. It is a manufacturing, commercial, and railway centre. *Brno* (*Brünn*), the second city in size, in the iron and coal district, has large plants for making machinery. Other centres are *Pilsen*, a busy manufacturing city, and *Bratislava*, a port on the Danube River.

POLAND

Position, Extent, and People.—*Poland* is one of the oldest states in Europe. At the end of the eighteenth century its territory was divided up among Austria, Prussia, and Germany, but at the close of the Great War the state was once more established as an independent republic. In area it is a little more than one-third as large as Ontario, with a population about three times as large as that of Canada.

Surface and Climate.—Poland lies within the central plain of Europe. In the south, however, there is much rolling country bordering on the Carpathian Mountains, and in the north the country is very hilly, with many lakes and considerable marsh land. There are dense forests in the south and south-west. The most important river is the *Vistula*, which drains the greater part of the country. The rainfall is sufficient for agriculture.

Industries.—The majority of the Poles are farmers, the principal crops raised being wheat, rye, potatoes, and sugar-beets. Dairy-farming goes hand in hand with the raising of crops. Horse-breeding is also of importance. Southern Poland is well supplied with coal and iron, so that an extensive manufacture of iron and steel products has sprung up. Other manufactures are cotton and leather goods. The country is very rich in minerals, including, in addition to those already mentioned, zinc, lead, and petroleum. But most remarkable of all are the salt mines near the city of Cracow.

Cities and Towns.—The capital is *Warsaw*, at the head of navigation on the Vistula, almost in the centre of the country. It lies in the midst of a fertile plain and has large manufacturing and commercial interests. *Cracow*, also on the Vistula, is a literary, artistic, and scientific centre. The chief manufacturing city is *Lodz*. Other important towns are *Posen* and *Vilna*. On the Baltic is the strongly-fortified seaport of *Gdynia*.

Danzig.—At the close of the Great War, Poland demanded an outlet by way of the Vistula to the Baltic Sea. To satisfy this request, the Allies made an international city of *Danzig* and a small surrounding district, with a government of its own. Full protection is provided for Polish commerce. Danzig is well equipped as an ocean port.

THE BALTIC STATES

General.—The four republics—*Finland*, *Estonia*, *Latvia*, and *Lithuania*—border on the Baltic Sea and collectively are known as the *Baltic States*.

Finland.—The most northerly of these republics is *Finland*, which lies to the north of the gulf of that name. It is about one-third as large as Ontario and has a slightly greater population. The surface of Finland is hilly and covered with marshes, lakes, and forests. The climate is extreme both in summer and in winter, with Arctic weather in the northern part. The rainfall is not abundant, but is sufficient for agriculture.

Most of the inhabitants are either farmers or herdsmen. Rye, oats, and potatoes are grown, but stock-raising and dairy-farming are of increasing importance. The forest industries, however, are the most valuable. The supply of timber is abundant and is manufactured into lumber, woodenware, wood-pulp, paper, cardboard, and matches for export. Iron is mined, and some silver and copper are found. There are large granite quarries. On the coast, fishing is an industry of some importance.

Helsinkï (Helsingfors), Finland

The capital, *Helsinkï* (*Helsingfors*) has a good harbour, but it is closed by ice during the greater part of the winter.

Estonia.—The republic of *Estonia* lies to the south of the *Gulf of Finland*. Its area is a little less than that of Nova Scotia, and its population is about one-third that of Ontario. The people are well educated and industrious. The surface of the country is mainly a sandy plain, with peat-bogs, lakes, and tracts of dense forests. The summer climate is damp, and the winters are cold. Grain-growing and dairy-farming are important industries. Flax and hides are exported. Some lumber is cut, while on the coast many of the inhabitants are fishermen. The capital is *Tallinn* (*Reval*) on the Gulf of Finland, a shipping centre.

Latvia.—*Latvia* is about a third larger than Estonia and has a population of about 1,900,000. The surface and the industries are similar. The capital is *Riga*, an important seaport at the mouth of the *Southern Dvina River*.

Lithuania.—*Lithuania* is slightly smaller than Latvia, but is more densely populated. Its eastern boundary is in dispute with Poland. The people, surface, climate, and industries are similar to those of Estonia. Rye is the staple crop. *Kovno* is the capital and the most important city.

RUSSIA

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The Russian Republics.—*Russia* covers an immense territory in both Europe and Asia and is densely populated. European Russia is divided into a number of Soviet Republics, that is, republics controlled by committees of workingmen. The most important of these are *Soviet Russia*, *White Russia*, and *Ukraine*, but there are a large number of smaller republics. All of these, together with the Soviet Republics in Asia, are joined together in a loose federation as the *Union of Soviet Socialist Republics*. Each republic manages its own affairs, but it must not do anything that will injure the Union as a whole.

Position, Extent, and People.—*Russia* is the largest of the countries of Europe. It occupies almost the entire eastern part of the continent and extends from the Black Sea, the Caucasus Mountains, and the Caspian Sea in the south far into the Arctic Circle. In area it is as large as Quebec, Ontario, Manitoba, and Saskatchewan combined and has a population over ten times as great as that of the whole of Canada. The people of Russia are of Slavonic stock, but about one-third of the total population is of Asiatic descent.

Surface and Climate.—With the exception of the *Valdai Plateau*, which itself is flat and only about 1,100 feet in height, the surface of Russia is a remarkably level plain. Most of the rivers have their sources in this height of land. The *Volga*, after a course of 2,200 miles, nearly all of which is navigable, enters the *Caspian Sea.* The *Dnieper* and the *Don* flow into the *Black Sea*, and the *Dvina* into the *White Sea.* The *Pechora*, however, rises in the Ural Mountains and flows into the Arctic Ocean. These rivers are invaluable for inland navigation during the summer months, although, as the rainfall all over Russia is comparatively small, many of the rivers are useless for this purpose during the latter part of the summer. Canals have been dug from river to river, so that there are water-routes in all directions. The surface of the country is dotted with lakes, especially in the north and west. *Lake Ladoga*, which is nearly as large as Lake Ontario, is the largest lake in Europe.

The plain bordering the Caspian Sea on the north is below sea-level. In fact, the Caspian Sea itself is eighty-five feet below the level of the Mediterranean. It has no outlet, and its waters, as a result of constant evaporation, are very salty. There are many small lakes of a similar character in this district.

The *Ural Mountains*, which form the eastern boundary of Russia, are very low and with such gentle slopes that they can scarcely be said to be mountains at all. On the other hand, the *Caucasus Mountains* are a magnificent range, with lofty peaks, deep valleys, and immense glaciers. *Mount Elbruz*, an extinct volcano, is one of the highest mountains in Europe.

The climate of Russia varies with the latitude. In the north it is Arctic. In the centre the winters are cold, and the summers are very hot. In the south the climate is very warm all the year round. Increasing distance from the Atlantic tends to make the winters colder. The rainfall, nowhere abundant, is sufficient for agriculture, except in the district around the Caspian Sea, where rain scarcely ever falls.

Industries.—The northern part of Russia is unproductive. It is inhabited chiefly by *Lapps*, whose reindeer feed, both summer and winter, on the grass of the tundra. South of the tundra is the forest region, consisting largely of evergreen trees. The forest is interspersed with lakes, marshy meadows, and cleared spaces of dry ground. Furs, lumber, and resin are the chief forest products. South of the forest is the great agricultural region of central Russia, known as the "black earth belt," about 150,000,000 acres in all. This is much like our western prairie, almost treeless, and with a rich, dark soil. In this district are grown wheat, oats, barley, hemp, flax, rye, sugar-beets, and potatoes. Dairying is also carried on, particularly the making of butter. Eggs are exported in very great numbers. The fertile area changes gradually into the more arid steppe region, where immense numbers of cattle, sheep, and horses are raised. In the south and south-east tobacco, grapes, and some of the hardier fruits are grown.

The country is also rich in minerals. Coal and iron are found in various parts, sometimes so close together that smelters can be easily operated. Especially in the Ural Mountains, mining assumes the importance of a great industry. There platinum, gold, copper, iron, and graphite are found. The platinum mines are of enormous value, as the greater part of the world's supply of this precious metal comes from them. Petroleum in large quantities is found near the Caspian Sea.

The Kremlin (Citadel), Moscow

The Kremlin contains some magnificent public buildings.

Fishing is not now such a valuable industry as it once was. There is, however, still much fishing in the inland waters. Sturgeon are caught in the Caspian Sea. The preparation and export of the roe of the sturgeon as "caviare" employs a large number of people.

The population of Russia is so great that a large part of the manufactured products is required for home use. The iron and steel industry is well established; smelters are numerous, and there are very many steel plants. Cotton, manufactured from raw material brought from the Asiatic Soviets, is the most important product. The woollen and silk industries are also flourishing. Rubber goods, china, glass, wood-pulp, and paper are other leading manufactures. There are, in addition, many other industries dependent upon the products of the farms, such as brewing, distilling, flour-milling, tanning, and the manufacture of tobacco, soap, candles, and leather goods. A great deal of manufacturing is carried on in the homes of the people.

There are comparatively few railways in Russia, there being only about 36,000 miles in the whole of the immense country. Practically all of them centre in Moscow. In summer, the rivers and canals provide a means of transportation. In winter, sleds, drawn by horses, are used.

Cities and Towns.—The largest and the chief city in Russia is the capital, *Moscow*, or, as the peasants call it, "Holy Mother Moscow." It is situated on a navigable tributary of the Volga, in the very heart of the country and within easy reach of the black earth belt. Coal is found near at hand, so that it has many manufactures. It is also a railway, commercial, and distributing centre. Many magnificent churches and handsome public buildings adorn the city. The former capital, *Leningrad*, at the head of the *Gulf of Finland*, was founded over two centuries ago by Peter the Great. It is a busy city, next to Moscow in size, with an immense shipping trade. It is beautifully laid out and has many fine public buildings and private residences. *Archangel*, on the White Sea, is an important shipping point during the summer months. *Odessa*, on the Black Sea, is also an important seaport, with large manufacturing interests as well. It has a population about two-thirds of that of Toronto. *Sebastopol*, in the Crimea, has large shipbuilding plants. *Kiev* is a strikingly picturesque city on the Dnieper River and is a commercial and industrial centre. Other cities are *Nizhni Novgorod*, on the Volga, which is a flourishing trading centre, *Perm*, a mining city at the base of the Ural Mountains, *Tula*, a steel city south of Moscow, and *Astrakhan*, located at the mouth of the Volga. The latter is the centre of the extensive sturgeon-fisheries of the Caspian Sea.

Spring Ploughing in Rumania

RUMANIA

Position, Extent, and People.—The kingdom of *Rumania*, situated between Hungary and the Black Sea, has an area about one-third as large as that of Ontario and a population nearly double that of the whole of Canada.

Surface and Climate.—North of the great plain of the *Danube* and west of the plain of the *Dniester* and *Pruth Rivers*, the surface is very mountainous. On the border adjoining Hungary, however, there is a plain of considerable extent. The climate on the higher levels is quite severe in winter, but on the plains, while the winters are cold, the summers are warm. There is sufficient rain for farming, although toward the south-east the rainfall is light.

Industries.—On the plains and in the valleys agriculture is the leading industry. Immense crops of wheat, corn, and barley are raised, not only for home use but also for export. In the drier parts, horses, cattle, and sheep wander in large herds. Dense forests clothe the mountain sides, giving employment to many men in lumbering and the making of wood-pulp and paper. Coal, iron, gold, and salt are mined, and there are large petroleum districts. The principal manufactures are leather goods and glass. The country is well provided with railways. Communication by sea with the outside world is maintained through the Danube River and the Black Sea.

Cities and Towns.—*Bucharest*, the capital is situated in the midst of a swampy plain on both sides of a small tributary of the Danube. It is a picturesque city, the home of the wealthy classes, and the seat of the national university. *Kronstadt*, in the heart of the mountain district, is a manufacturing city. Ocean-going vessels can proceed up the Danube as far as *Galatz*—the chief shipping port of the country.

SPAIN AND PORTUGAL

Position, Extent, and People.—Jutting out from the mainland of Europe toward the south-west is the *Iberian Peninsula*, comprising the two republics of *Spain* and *Portugal*. The Peninsula is separated from France by the *Pyrenees Mountains*, lofty, snow-capped, and almost impassable. On the south the *Strait of Gibraltar*, about ten miles in width, separates Spain from Africa. The whole Peninsula is slightly smaller than the Province of Manitoba, while Portugal alone is somewhat larger than New Brunswick.

Lying in the Mediterranean Sea a short distance east of the Spanish coast, are the *Balearic Islands*, the largest of which are *Majorca* and *Minorca*. They belong to Spain. Their total area is a little less than that of Prince Edward Island. The climate is mild, and the soil is very fertile.

The Peninsula has a population of about 28,000,000, of whom a little less than one-quarter live in Portugal.

Colonies.—Spain is not now a colonial power. She possesses only the *Canaries* and some small colonies in Africa. Portugal has been more fortunate and has large colonies in Africa, in addition to the *Madeira*, the *Azores*, and the *Cape Verde Islands*.

Surface and Climate.—The greater part of the Iberian Peninsula is a central plateau, bounded on the north by the *Pyrenees* and *Cantabrian Mountains* and on the south by the *Sierra Nevada Range*. Across the plateau from east to west run numerous short ranges. The plains of the *Guadalquivir* and *Ebro Rivers* are the most productive sections in Spain. The northern region is entirely mountainous, while a narrow strip of lowland runs almost around the Peninsula. The rivers are rapid and contain but little water. They are, for the most part, of little use for navigation.

The climate of the Peninsula varies greatly. The elevation has much to do with this variation. As a rule, the winters are wet and cold and the summers dry and very hot. The prevailing westerlies bring an abundance of rain in the winter, but a large part of this falls along the coast, as the winds lose their moisture in passing over the mountains. The southern part of Spain lies within the horse latitudes, and, consequently, has little rain. The temperature, moreover, is greatly modified by the Pyrenees Mountains, which cut off the cold winds of northern Europe.

Industries.—Industrially, Spain and Portugal are not progressive nations. For this the people themselves are largely responsible. There are, however, other reasons. The numerous mountain ranges have cut the country into districts, between which communication is difficult. This, together with the fact that few of the rivers are navigable, has hindered internal trade. Then again, the Pyrenees are a real trade barrier between France and Spain. Only two railways enter the Peninsula, both along the coast, one at the east and the other at the west end of the mountains. To make matters worse, the railways of Spain have a different gauge from those of France, thus making the running of through trains impossible. Further, although the two countries have an extensive coast-line, there are few harbours of any importance. All these factors have hindered the industrial development of the whole Iberian Peninsula.

In many parts of the country irrigation is necessary for agriculture. It is in these parts that the people are the most progressive and the production is greatest. In the south, rice, grapes, olives, oranges, lemons, figs, dates, and even some cotton are grown. Wheat, however, is the staple crop. The uplands furnish pasture for immense flocks of sheep, Spain being one of the great sheep countries of Europe. Cattle are also raised, but mainly for local consumption. The stripping of the bark from the cork-oak furnishes employment for many people.

The mineral resources of the Peninsula are very great, but they are mainly in the hands of foreigners. Spain produces more quicksilver than any other country, and in copper production ranks seventh among the nations. There are many coal mines that were in operation in the time of the Romans, but these are now little worked. The iron mines of the north yield enormously, but the product is almost all shipped to Great Britain and France. Lead and silver are found in large quantities.

The fishing industry along the coast is not so important as one would expect from the length of the coast-line. Off the west coast of Portugal, however, sardines are caught in immense quantities and are a staple article of food. There are many factories, particularly in and near Lisbon, where sardines are canned for export.

Although there is some manufacturing in the cities, the output of the factories barely supplies the home market. There is plenty of raw material, but the Spaniards and the Portuguese find it much easier to export this than to manufacture it themselves. Iron and steel goods, however, are being manufactured in increasing quantities in the coal and iron district of the north. Wine is the chief export of the two countries. Cottons, woollens, jewellery, glass, and china are also manufactured.

Stripping Bark from the Cork-oak, Portugal

Cities and Towns.—*Madrid*, on a tributary of the *Tagus River*, is the capital of Spain. It is not important industrially, although it has a population of about 800,000. It contains many fine buildings, but its beauty is spoiled by the appearance of the surrounding country, which is almost a desert. *Granada*, high up among the mountains, contains the Alhambra, the famous palace of the Moorish kings of Spain, now only a magnificent ruin. *Seville* has important manufactures, the principal being tobacco. *Cadiz* is a strongly fortified naval station.

Valencia, surrounded by a lovely and fruitful country, and *Barcelona,* with its excellent harbour, are leading manufacturing centres. *Lisbon,* the capital of Portugal, is situated at the mouth of the river *Tagus.* Its harbour is spacious, so that the city has an extensive shipping trade. *Oporto,* at the mouth of the *Douro River,* is the only other city of importance. From this city port-wine is exported in great quantities.

GIBRALTAR AND MALTA

Gibraltar.—Gibraltar is a lofty, strongly fortified rock, less than two square miles in area, on the south coast of Spain, joined to the mainland by a sandy isthmus one and a half miles long and half a mile broad. The rock rises to an altitude of 1,396 feet, and is precipitous on all sides except the southern. Between the west side of the rock and the sea lies the town, which has a large transit trade both with Spain and with Morocco. The water supply is almost wholly derived from rain-water. There are large collecting areas, and the water is stored in large tanks which have a capacity of 6,000,000 gallons. Gibraltar is a crown colony of Great Britain, in whose hands it has been since 1704. The fortifications are so strong that the Rock is considered to be impregnable. The population, including the British garrison, is about 21,000.

Gibraltar from the South

Malta.—Lying in the Mediterranean Sea sixty-five miles south of Sicily, are a number of small islands belonging to Great Britain. The largest of these is *Malta,* with an area of ninety-five square miles. The total population of the islands is about 225,000. The soil, though rather poor, is highly cultivated. Corn and cotton are the principal crops, but semi-tropical fruits grow luxuriantly. The climate, except in the very hot summer months, is delightful. Owing to their central position in the Mediterranean, the islands are a port of call and coaling-station for vessels. They are strongly fortified, and a permanent garrison is maintained there by Great Britain. *Valetta,* the capital, has a beautiful harbour and excellent docking and coaling facilities. It is an important commercial centre.

ITALY

Position, Extent, and People.—*Italy* is a peninsula, separated from France, Switzerland, Austria, and Yugo-Slavia by the *Alps,* and bordered on the west and the east by the *Mediterranean* and *Adriatic Seas.* In shape it resembles a boot, with the island of *Sicily* at its toe. Off the west coast lies the island of *Sardinia,* about five times as large as Prince Edward Island. Near the coast, also, is the island of *Elba,* where Napoleon was for a time exiled. The whole Italian kingdom has an area a little less than a third as great as that of Ontario. It contains a population about four times as large as that of Canada.

Colonies.—The Italians have colonies in several parts of the world, particularly in Africa. There they have under their control *Libia, Eritrea,* and *Italian Somaliland.*

Surface and Climate.—The *Apennines* form the backbone of Italy. From the *Gulf of Genoa* on the north, where they touch the Alps, they extend southward through the peninsula. There are many fertile valleys in the mountains, but there are very few forests, except along the lower slopes. Formerly the entire mountain system was forest-clad,. but the trees were long ago cut down. A spur of the Apennines which extends into Sicily contains *Mount Etna*, which is frequently in eruption. Near *Naples* is *Mount Vesuvius*, the most famous volcano in the world.

Lying between the Apennines and the sea on the west, are many fertile districts. There is a great deal of marsh land, very unhealthy on account of malaria. This disease is spread by mosquitoes, which breed there. To the east of the Apennines the country is fairly level, with tracts of pastoral and agricultural land. Few people live around the shores of the *Gulf of Taranto*, owing to the marshy nature of the soil.

Between the Apennines and the Alps and running down to the Adriatic Sea, is the *Lombardy Plain*—the largest extent of lowland in Italy. The Po, which drains this plain, has many tributaries. These tributaries, as well as the Po itself, have many waterfalls in their descent from the mountains. These provide water-power. High up in the Alps are a number of lakes, such as *Maggiore*, *Como*, and *Garda*, beautiful in themselves and valuable as reservoirs for irrigating the plains beneath.

As the mountains are near the sea, the rivers of Italy, with the exception of the Po, are short and of little use for navigation.

We are accustomed to think of Italy as a perpetual summer land of flowers and fruit, and yet the northern part of the country is in the same latitude as Toronto. There are several reasons why the climate should differ from that of Southern Ontario. In the first place, the Alps in the north prevent the cold winds from reaching the plains to the south, and, similarly, the Apennines protect the west coast. Secondly, Italy is almost entirely surrounded by the Mediterranean Sea, and its warm waters temper the climate. Except in the mountains, the temperature rarely falls below the freezing-point. In winter there is an abundance of rain, greater in the south than in the north, but the summers are dry. In consequence, irrigation is largely used, especially in the Lombardy Plain, where the lakes close by among the mountains furnish a never-failing supply of water.

Naples, Italy, and Mount Vesuvius in the Distance

Industries.—Although there is so much mountainous and marsh land in Italy, agriculture is the chief occupation of the people. The climate is so favourable, the soil so fertile, and the water supply so abundant, that in some parts four or more crops a year may be gathered. Not only the ordinary crops of the Temperate Zone, such as wheat, corn, oats, and barley, are raised, but many tropical products as well. Rice is grown in the irrigated fields of the Lombardy Plain. Mulberry trees flourish, and immense quantities of raw silk are produced. Grapes grow luxuriantly, making Italy second only to France in the manufacture of wine. In the south, oranges, lemons, and olives are cultivated. Chestnut trees, valuable for the meal ground from the nut, grow among the mountains. The rich pasture lands at the base of the mountains and in the plains furnish food for large herds of cattle. Sheep and goats are raised on the higher slopes.

Fishing is another leading industry, but practically all the catch is sold at home. Sardines, oysters, and sponges are exported.

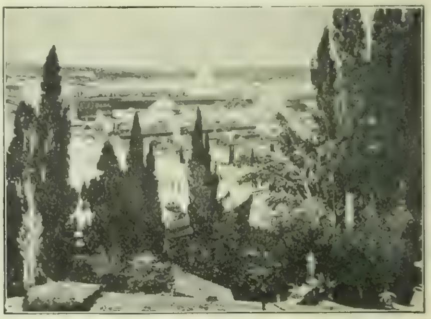
There is little mining done in Italy. Valuable deposits of iron are found in the island of Elba, and Sardinia produces iron, lead, and zinc. Sulphur is exported in large quantities from the volcanic districts of Sicily. The pure white marble of *Carrara* is famous all over the world for its beauty.

Lack of coal has hindered the development of manufactures in Italy. But the Italians are now making use of the water-power found almost everywhere, with the result that manufactures are increasing rapidly. The cotton industry is the largest and most important. Silk goods, manufactured from the raw material produced within the country, are one of the chief exports. Woollen goods, largely from imported raw materials, are also made, but mainly for home use. Wine is one of the most important products. Macaroni, cheese, olive oil, straw hats, lace, and coral jewellery are other leading manufactures.

Italy has a large foreign trade, much of which is carried by water from the excellent harbours along the coast, but at the same time the railways play a large part in transportation. No fewer than six railways enter Italy from France, Switzerland, and Austria.

Cities.—Most interesting of all Italian cities is the capital, *Rome*, on the *Tiber River*. The visitor cannot wander through its streets without being reminded at almost every step of the greatness of ancient Rome. Ruins, such as those of the Colosseum, an amphitheatre which seated 50,000 people, and the Forum, the great public square of the Romans, help us to realize what the city must have been in the days when it was mistress of the world. The city has many magnificent churches and public buildings.

Naples, the largest city and the chief port of Italy, is situated on the beautiful *Bay of Naples* in the midst of a densely populated region. A few miles east of the city is *Mount Vesuvius*, nearly a mile in height and constantly active. At the base of the volcano lie buried the cities of *Pompeii* and *Herculaneum*, destroyed long ago by an overflow of lava. *Florence*, one of the cities most attractive to tourists, is noted for its olive groves, its churches, and its art galleries. It is also a manufacturing centre. *Milan* and *Turin* are important cities of the Lombardy Plain. The former is celebrated for its Cathedral, one of the finest specimens of architecture in the world. *Pisa* is famed for its Leaning Tower. *Genoa*, on the gulf of that name, is noted for its shipping and its commercial activities. At *Bologna* is the oldest university in Europe. *Palermo*, *Messina*, and *Syracuse* are the leading cities on the island of Sicily.



A Panoramic View of Rome, Italy

The most curious of all the Italian cities is *Venice*, built on more than one hundred islands in the Adriatic, about two and a half miles from the mainland. There are about one hundred and fifty canals in the city and over four hundred bridges. The people move about in boats, known in Venice as gondolas. The whole appearance of the place is strikingly beautiful. There are many palaces and churches, among the latter being the famous church of St. Mark.

VATICAN CITY AND SAN MARINO

Vatican City.—Prior to 1871, when Rome became the capital of Italy, the Pope exercised temporal power over quite a large territory. For many years there was a dispute between the Roman See and the Italian government as to the powers to be exercised by the Pope. In 1929, the dispute was settled, and the independent political sovereignty of the Pope was acknowledged by the government of Italy. The See and Church of Rome has sovereignty over a small territory of 110 acres within the city of Rome. The state is known as *Vatican City*. Within its bounds are the Vatican, the official residence of the Pope, and St. Peter's Cathedral, which is one of the finest church edifices in the world and is celebrated for its immense dome.

San Marino.—Near the Adriatic Sea, entirely surrounded by Italian territory, is *San Marino*, the most ancient republic in the world. It is thirty-eight square miles in area, has a population of 12,000, and has existed for over a thousand years. The people are engaged mainly in farming. The city of San Marino surrounds a citadel perched high upon a mountain 2,650 feet in height. The state is under Italian protection.

YUGO-SLAVIA

Position, Extent, and People.—The kingdom of *Yugo-Slavia* is made up of a number of Slavonic peoples inhabiting the western part of the Balkan region—*Serbs*, *Croats*, and *Slovenes*—who speak various dialects, but are sufficiently alike in language, customs, and traditions to form a united kingdom. Yugo-Slavia means "the home of the southern Slavs". The area of the country is about one-quarter of that of Ontario, with a population a third larger than that of Canada.

The Yugo-Slavians are a thrifty, hard-working people, fond of bright-coloured, picturesque costumes, music, and festive gatherings.

Surface and Climate.—The surface of Yugo-Slavia is, in the western part, a tangle of mountains. The mountain valleys are very fertile. In the eastern part the country consists of the plain of the *Danube* and its tributary, the *Drave*. The coast-line on the Adriatic Sea has no good harbours, as the mountains follow the coast and run down almost to the sea. This lack of harbours, however, is made up for by the proximity of *Fiume*, to which railways run from the interior of Yugo-Slavia. The climate is continental, with warm summers and cold winters. The south-west winds from the Mediterranean provide plenty of moisture during the summer months.

Industries.—Agriculture is the principal occupation of the people. In the western part, wheat, barley, oats, and rye are the most important crops, while in the eastern and southern districts, tobacco, plums, figs, grapes, and olives are grown. Cattle and sheep are pastured on the mountain slopes in summer, and, as in Switzerland, are brought back to the valleys for the winter. In the forests the oak and the beech flourish, and on the nuts from these trees large droves of hogs are fattened. These forests have been carefully preserved and furnish lumber in abundance for the neighbouring countries. Coal, iron, lead, gold, and silver are found, but the mines as yet have been little developed. Woollens, carpets, sugar, wine, flour, and leather goods are the principal manufactures. The country has numerous railways. The Danube is an important trade route.

Cities and Towns.—*Belgrade*, the capital and chief commercial city, is situated on the south bank of the Danube. *Zagreb*, the second city in size, is also the second city in commercial importance.

ALBANIA

The kingdom of *Albania,* a small country on the Adriatic Sea south of Yugo-Slavia, has an area four-fifths of that of Nova Scotia and a population about equal to that of Montreal. The *Albanians,* "people of the snow-land," are the most ancient people in South-eastern Europe, and their origin is shrouded in mystery. They call themselves *Skipetari,* or mountaineers, and are distinguished for their passionate love of country and for their refusal to mix with other races. About two-thirds of the population are Mohammedans, and the rest are Christians.

Albania is swampy and unhealthy along the coast, but very mountainous inland. Olives are cultivated in the coastal district, and grain, fruit, and tobacco are raised in the inland valleys. The larger number of the people, however, are shepherds and cattle-breeders. The chief products traded in are olive oil, wool, tobacco, and valonia—an extract made from oak trees for tanning purposes. There are about twenty-two miles of railway in the country. *Tirana,* the capital is situated some twenty miles east of *Durazzo,* its seaport. The two largest towns are *Coriza* and *Scutari,* while *Valona* promises to become the most important port.

BULGARIA

Position, Extent, and People.—The kingdom of *Bulgaria* has less than half the area and population of Yugo-Slavia. Three-quarters of the inhabitants of Bulgaria are Slavs, the remainder being Turks, Armenians, Greeks, Gypsies, and other foreigners. The people are industrious, but somewhat warlike.

Surface, Climate, and Industries.—Through the country run the *Balkan Mountains.* The surface both to the north and to the south of the mountains is hilly, with extensive forests. The climate is much like that of Yugo-Slavia. South of the Balkans it is very mild. In this part, tobacco, rice, grapes, plums, sugar-beets, and mulberry trees are cultivated. The gardens of the southern district yield millions of roses, from which is made the perfume known as attar of roses.

The majority of the people are farmers or herdsmen. Wheat and corn are the principal grains. Cattle, sheep, hogs, and goats are raised. The forests give employment to large numbers of lumbermen. Some coal and iron are mined, and there are a few cotton and woollen factories. The railway from Vienna to Constantinople passes through Bulgaria, thus giving trade connection with both the east and the west.

Cities and Towns.—The principal cities are *Sofia,* the capital, situated on the Vienna-Constantinople railway, and *Philippopolis* on the *Maritza River.* The latter is a busy industrial and commercial centre. *Varna* is the chief seaport on the Black Sea.

GREECE

Position, Extent, and People.—The republic of *Greece* is almost as large as our Maritime Provinces, with a population a little more than one-half that of Canada. The Greeks have always been sailors and traders, frugal, energetic, and industrious.

Surface and Climate.—The surface is very mountainous, with fertile valleys and few rivers. The coast-line is irregular, and numerous bays run into the land. The *Gulf of Corinth* almost cuts off the tip of the peninsula proper, the isthmus being only a few miles wide. A ship-canal has been constructed through this isthmus. Off the west coast are the *Ionian Islands,* while in the *Aegean Sea* are a multitude of small islands. The climate is always mild, but very hot and dry during the summer months.

Industries.—Only about a fifth of the land surface is suitable for agriculture. Wheat, cotton, olives, grapes, figs, and lemons are large crops. The tobacco-growing industry is of first importance. The mulberry tree flourishes. Small, seedless grapes, which when dried are known as currants, are grown, especially in the Ionian Islands. Sheep and goats are raised on the farms. Iron, lead, zinc, and copper are mined, and marble and building stone are quarried. Fishing is a leading industry. There are few factories, but the weaving of carpets is becoming of great importance.

Cities.—*Athens,* the capital, is built about a small hill in the midst of a plain surrounded by mountains except toward the sea. Modern Athens is beautifully planned, with boulevards, trees, and open spaces. It is one of the most attractive of the Mediterranean cities. The ruins of the ancient city are of intense interest. The beautiful temple known as the Parthenon, remarkably well preserved, still crowns the Acropolis, the ancient citadel of Athens. As Athens is four miles from the sea, its trade is carried on through *Piraeus,* an important commercial city. These two cities are the chief manufacturing districts of Greece, and the output of cottons, silks, and leather goods is large. *Salonica,* at the head of the gulf of that name, has an extensive shipping trade and is the ocean terminus of a railway from Vienna.

The Ruins of the Parthenon, Athens, Greece

The island of *Crete,* which lies in the Aegean Sea, belongs to Greece. The principal products are olive oil, wine, raisins, and almonds. *Candia,* situated on a small harbour on the north coast, is the chief town of Crete.

EUROPEAN TURKEY

The larger part of the territory of the republic of *Turkey* is in Asia. The European section has an area of only about 9,000 square miles, with a population of 1,300,000. The two straits which form a part of the boundary between European and Asiatic Turkey—the *Bosphorus* and the *Dardanelles*—are international waters, that is, they are open to all nations for use on equal terms.

The surface of the country is mostly mountainous, but there is a great deal of excellent agricultural land in the valleys and on the slopes of the hills and mountains. The climate is mild and healthful, but the summers are hot and dry. Grapes, plums, olives, almonds, figs, tobacco, and the cereals of the Temperate Zone are extensively grown. Silk is one of the most valuable exports of Turkey.

Cities. — *Constantinople* is one of the famous cities of Europe. It was founded by the Greeks 700 years before Christ. It is picturesquely situated on the Bosphorus and the Sea of Marmora. Seen from a distance, it is, with the exception of Naples, the most beautiful city in Europe. It is, however, a very dirty place, with large slum districts. The Mosque of St. Sophia is second only to the great mosque at Mecca, in Hejaz-Nejd, the centre of the Mohammedan world. There is in this city a large foreign population. Constantinople was formerly the capital of the Turkish Empire, but, when the Turkish Republic was constituted in 1923, the capital was removed to *Angora* in Asiatic Turkey. *Adrianople,* on the *Maritza River,* about 137 miles from Constantinople, is a city of considerable commercial importance. Its situation on the line of railway between Belgrade and Constantinople makes it a distributing point for a large territory.

ASIA

THE CONTINENT AS A WHOLE

Map Questions.—What ocean is between Asia and North America? What strait separates these continents? What ocean is north of Asia? South of Asia? What continents touch Asia on the west? What two seas are between Asia and Europe? Name one sea between Asia and Africa. What neck of land separates the Mediterranean from the Red Sea? What two continents does it join?

Name five seas upon the east coast. What peninsula separates the *Sea of Okhotsk* from *Bering Sea?* What islands almost inclose the *Sea of Japan?* The *China Sea?* What peninsula separates the *Yellow Sea* from the Sea of Japan?

What peninsula of Asia extends farthest south? Name the group of large islands close to it. Name a bay, a sea, and two gulfs on the south coast of Asia.

Name three large rivers flowing northward into the Arctic Ocean, and three into the Pacific Ocean. What large river empties into the *Bay of Bengal?* Into the *Arabian Sea?*

Where is the central point at which the mountain ranges of Asia meet? In what directions do the mountain ranges radiate from the *Pamirs?* Where is the highest land in Asia?

In what zones is Asia? In what zone is the greater part of the continent? What coast is in the North Frigid Zone? What coast is largely in the Torrid Zone? Where is the warmest part of Asia? The coldest?

Its Ancient Civilization.—The world today is dominated by peoples of European descent. These are the most progressive nations of the world. It is hard for us to realize that there were great nations living in *Asia* long before the peoples of Europe, in general, had emerged from a state of savagery. When Europe was, for the most part, the home of fierce tribes of nomad hunters, Asia was already the seat of mighty empires, such as Assyria, Babylonia, and Persia. Before our own ancestors emerged from barbarism, the Chinese had already reached a high degree of civilization. To Asia, also, we owe both the Jewish and the Christian civilization.

For many centuries the peoples of Asia either made no further progress, as in China, or even fell back to a lower level of civilization, while those of Europe and of the New World were advancing in knowledge, skill, and wealth. Now a great deal of Asia has come under the domination of European nations.

Size, Extent, and People.—Turn to the globe and glance at this ancient continent. The first thing that we note is its great size. It is almost twice the size of North America, and contains about one-third of the land area of the world.

This huge continent contains more than half the people of the whole world. Three-fourths of the people of Asia are of the *Mongol race,* to which the yellow-skinned peoples of the world belong. The remaining fourth of the Asiatics are, like ourselves, of the *Caucasian race,* although most of the Asiatic Caucasians are darker in colour than we are.

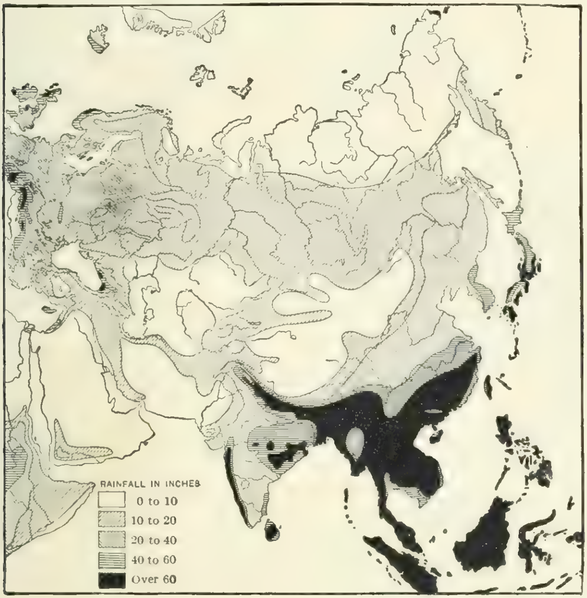
The Dividing Mountain Ranges.—The continent is so vast that for purposes of study we must find some way to divide it into convenient sections. This, fortunately, is not hard to do, for our physical map of Asia shows us at once that the mountain system of the continent divides it into four main divisions.

Find the *Pamirs* on your map. This region is a great plateau of rolling hills and gravelly plains, situated more than two miles above the level of the sea. From it radiate the four principal mountain ranges of Asia. One stretches westward to the *Black Sea*; another runs south-westward to the *Arabian Sea;* the third extends north-eastward to the *Sea of Okhotsk*; the fourth strikes south-eastward to *Indo-China*. These four ranges divide the continent into four natural divisions.

Northern Asia.—The whole northern part of the continent is separated from the rest by a line of mountains extending right from one side of the continent to the other. Trace this dividing line from the *Caucasus Mountains* to the Sea of Okhotsk.

Northern Asia is a land of vast plains, broken in the eastern part by low mountains and plateaus. It contains several of the Soviet Republics.

The part of Northern Asia which lies between the *Caspian Sea* and the mountains forms a basin, or depression, much of which lies below the level of the ocean. The streams which rise in the mountains to the south and east of the basin flow into the lowest parts of it. There are many small salt lakes in this district, and two very large ones. The large salt lakes are *Lake Aral* and *Lake Balkash*. Why is the water in these lakes salt?



Rainfall Map of Asia

The southern part of the basin is so dry in summer that the whole region is a desert. The high mountains to the south and east prevent rain-bearing winds from reaching it. Here and there streams flow from the mountains into the desert. Their valleys form fertile oases, in which most of the inhabitants of the country live.

North of Lake Aral the ground rises gently to form the northern rim of the basin. The top of the rim forms a divide between this area of interior drainage and the vast plains which slope gently toward the Arctic Ocean. This belt of higher land is known as the *Khirgiz Steppe.* Here the land is not quite so parched as farther south and is covered with grass. The people of the steppe are, therefore, nomads, who wander in search of pasture for their herds of camels, cattle, and horses, and for their flocks of sheep and goats. The people of the steppe and of the desert belong to the Mongolian race.

North of the steppe is a wide belt of forested land, much like that of Northern Canada. It is much larger, however, for it extends right across Northern Asia in a broad band about 1,000 miles wide. The southern edge of this vast forest is fairly open, and the land is rich and well suited for farming. This area has been sparsely settled by Russians, who are colonizing this part of the continent.

On the northern edge of the forest the trees are smaller and the forests less dense, until at last the forest comes to an end. Between the forest and the Arctic Ocean is the tundra, much like that of Europe or of North America. The few inhabitants of the tundra, who are tribes belonging to the Mongolian race, rely upon fish and animals for their food. They have one domesticated animal—the reindeer. This animal is their mainstay, for it draws their sledges and provides them with milk.

The rivers of the northern plains are very large. Steamboats ply on them during the summer. They are of comparatively little use

Rivers - Obi and Yenisei, Lena.
(Arctic).

for commerce, however, for they all flow into the Arctic Ocean, which is, because of ice, unnavigable for a great part of the year.

(2) **South-western Asia.**—Now let us return to our physical map of Asia. We have already seen that a line of mountains runs eastward across the continent from the Caucasus to the Pamirs. Another range leaves the Pamirs and runs south-westward to the coast. These are the *Sulaiman Mountains.*

Primitive People of Northern Asia

The corner of Asia cut off from the rest of the continent by these ranges we may call *South-western Asia.*

South-western Asia is a land of plateaus, rimmed about by lofty mountains.

Practically the whole extent of South-western Asia suffers from an insufficient rainfall. It lies, as your map shows you, in the trade-wind belt, and cannot derive moisture from these dry winds. The Mediterranean coast lies far enough north to come within the range of the westerlies during the winter, and in that season it receives a fair rainfall. The rainfall is copious at the coast, but, owing to the high coast ranges which condense most of the moisture out of the winds, decreases rapidly inland. The southern part of *Arabia,* however, comes into the monsoon area and enjoys a moderate rainfall from June to September.

[illegible] - Tigris - Euphrates

The people of South-western Asia are mainly Caucasians. Why is this corner of Asia peopled by the same race as Europe? The high mountain barriers to the east and north are more difficult to cross than the waters of the Mediterranean or the Black Sea.

One of the tribes of *Central Asia* did burst through the mountain barriers long ago, swept over *Asia Minor,* and even crossed into Europe. These people were the *Turks,* and many of them now live among the Caucasians of Asia Minor.

The majority of the people living in South-western Asia are either farmers or nomads. The fertile lands of the coasts and of the river valleys and the oases of the interior are used for farms, on which barley, wheat, millet, and fruits of all kinds are grown. In southern Arabia the date-palm furnishes much of the food used by the Arabs. The mountain slopes and dry plains grow sufficient grass for scattered flocks of sheep. Camels and some fine horses are raised in Arabia.

(3) **Southern Asia.**—Let us now look at the third great division of the continent. There is a long mountain range running eastward from the Pamirs, marked on your map the *Himalayas.* The region south of the Himalayas and east of the Sulaiman Range we may call *Southern Asia.* It contains the countries known as *India* and *Indo-China.* Much of this part of Asia lies within the Torrid Zone, and the rest is so close to it that the climate is warm everywhere except on the high mountains.

Southern Asia is chiefly mountainous, with narrow plains around the coast. It contains two very large plains, one forming the valley of the *Indus River,* the other forming the valley of the *Ganges.* In nearly all parts there is abundant rain, brought by the monsoon winds.

Brahmaputra River

The mountains of Southern Asia are densely forested upon their lower slopes. The teak is the most valuable of tropical trees on account of its fine timber. There are also many dense jungles of bamboo.

The vegetation of Southern Asia is very abundant because the rainy and hot seasons coincide. The monsoon countries can grow much more food than the lands in which the summers are dry and winters wet, as, for instance, is the case in Asia Minor. This is one reason why Southern Asia is able to maintain an enormous number of people.

Elephants crossing a River, Burma

Animal life depends upon vegetation, and Southern Asia is very rich in both. There are many deer of various kinds, numerous herds of wild buffaloes, and many wild boars. Countless monkeys live in the tree-tops of the forests. Elephants are abundant in all the countries of Southern Asia, and the rhinoceros is found in Indo-China. The flesh-eaters are represented by the tiger, the panther, and the leopard. Jackals and vultures act as scavengers. Crocodiles infest the rivers. Snakes are particularly abundant, and many of them are poisonous. The most deadly is the cobra. Although Southern Asia is so densely populated, the people have never succeeded in exterminating the dangerous animals which range their lands. It is estimated that in India alone about 50,000 people and 100,000 cattle are killed by snakes and wild animals every year.

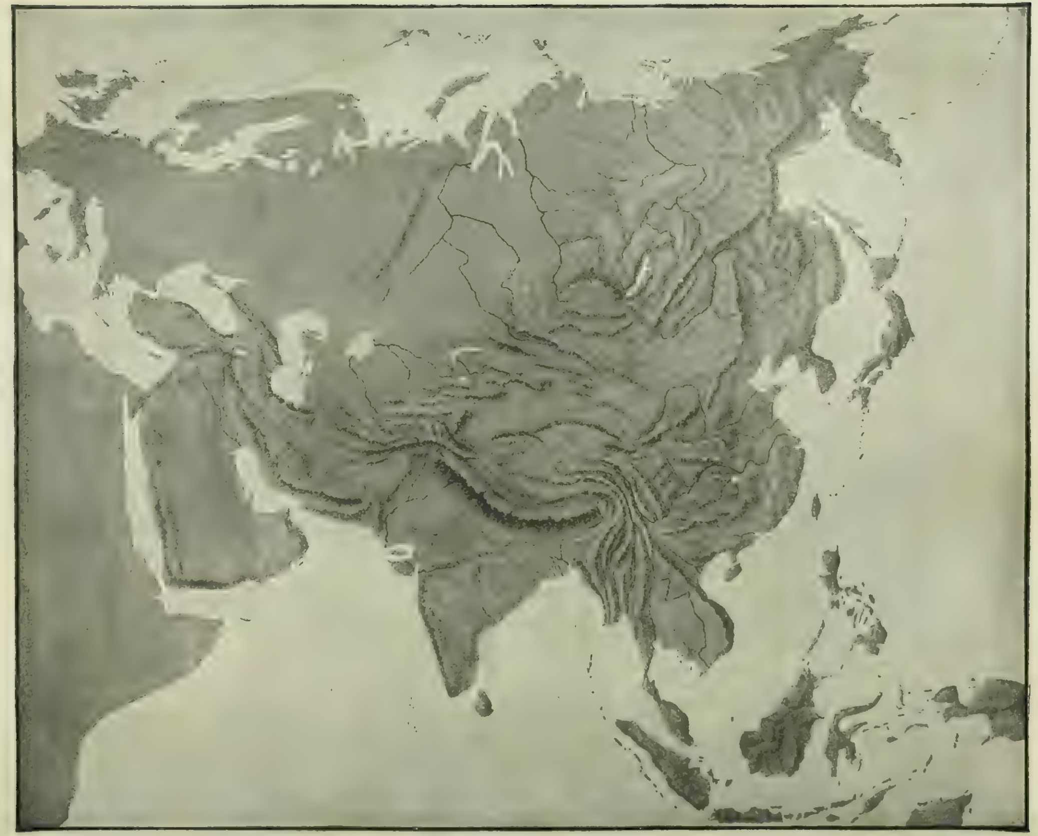
The peoples of Southern Asia are of many races. Most of the people of Northern India are of Caucasian origin, being descendants of invaders who swept into India from the west centuries ago. Farther south live the *Telugus* and the *Tamils*, who lived in the land long before the coming of the Caucasians. In the jungles of the interior of the Deccan are still many tribes of the savage hunters who were the original inhabitants of the country. In Burma the population is partly Caucasian and partly Mongolian. Farther south, there are many *Malays*, who came by sea, from islands to the east, to the peninsula which now bears their name, and many *Chinese*, who also came by sea from their own land farther north. The peninsula of Indo-China is inhabited mainly by tribes who belong to the Mongolian race.

④ **Eastern Asia.**—The fourth great subdivision of Asia comprises the region lying south-east of the ranges which extend from the Pamirs to the Sea of Okhotsk.

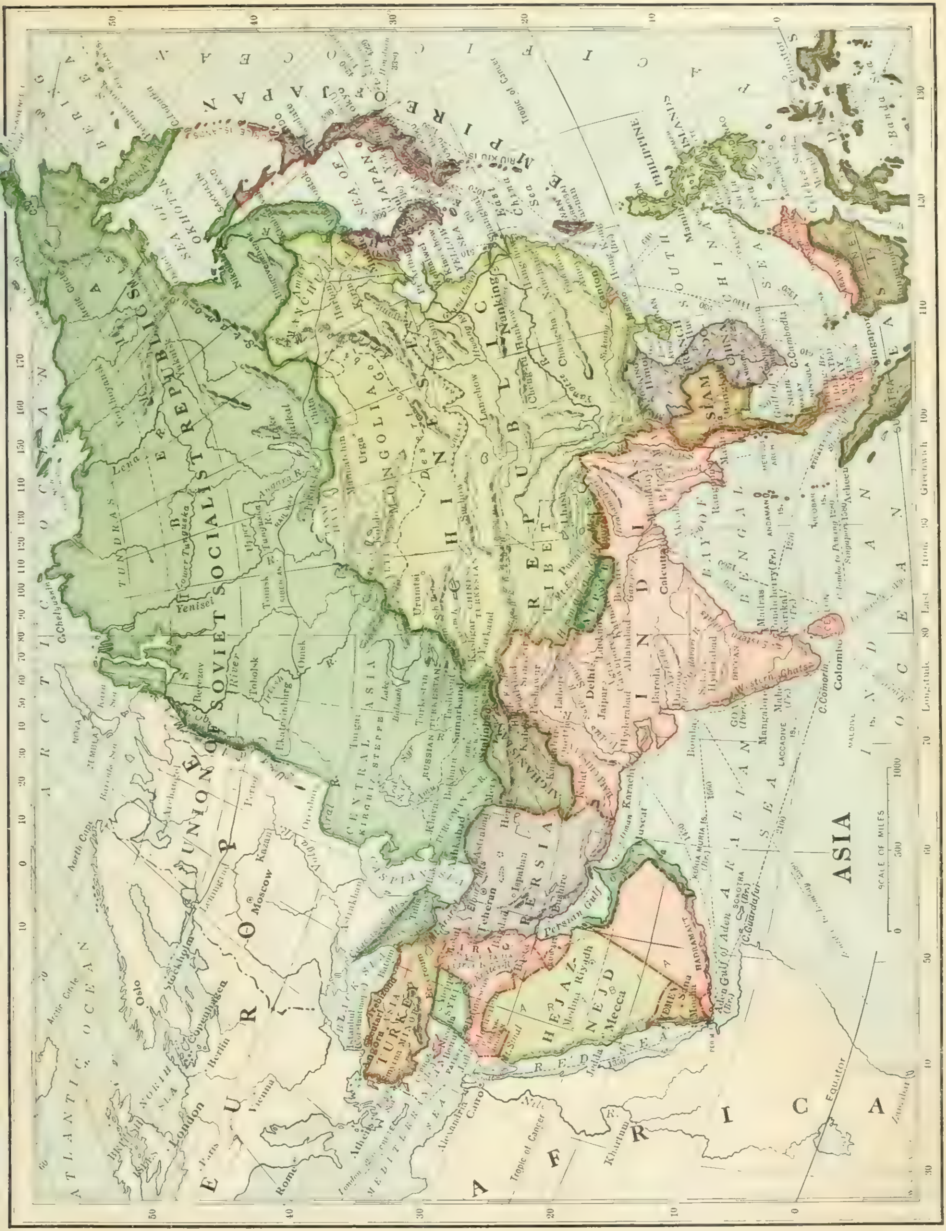
The *Great Khinghan Mountains*, parallelling the east coast, divide *Eastern Asia* into two very different regions. The western portion consists of high plateaus. The eastern section is the *Pacific Slope*. It is a hilly country, containing, however, one great plain and many smaller ones.

Inner Asia, as the western section may be called, is divided into three distinct areas. In the north is the cold *Mongolian Plateau*. The rest of Inner Asia is divided into two parts by the *Kuen-lun Mountains*. Between the Mongolian Plateau and the Kuen-lun Mountains lies a huge basin, called *Sinkiang* (formerly *Eastern Turkestan*). It is so dry that much of it is entirely desert.

In the Mountainous Country, Tibet



RELIEF MAP OF ASIA


ASIA
SCALE OF MILES
0
500
1000
ARCTIC OCEAN
PACIFIC OCEAN
INDIAN OCEAN
ATLANTIC OCEAN
BERING SEA
SEA OF OKHOTSK
SEA OF JAPAN
YELLOW SEA
East China Sea
SOUTH CHINA SEA
BAY OF BENGAL
ARABIAN SEA
RED SEA
Persian Gulf
Gulf of Aden
MEDITERRANEAN SEA
CASPIAN SEA
BLACK SEA
NORTH SEA
UNION OF SOVIET SOCIALIST REPUBLICS
TUNDRAS
CENTRAL ASIA
KIRGHIZ STEPPE
RUSSIAN TURKESTAN
CHINESE REPUBLIC
MONGOLIA
MANCHURIA
CHINESE TURKESTAN
TIBET
INDIA
NEPAL
AFGHANISTAN
PERSIA
TURKEY
SYRIA
IRAQ
ARABIA
HEJAZ
NEJD
YEMEN
OMAN
HADRAMAUT
SIAM
FRENCH INDO CHINA
PHILIPPINE ISLANDS
EMPIRE OF JAPAN
KAMCHATKA
SAKHALIN
BORNEO
SUMATRA
CEYLON
EUROPE
AFRICA
Tropic of Cancer
Equator
Moscow
Peking
Nanking
Canton
Calcutta
Delhi
Colombo
Singapore
Teheran
Mecca
Riyadh
Bombay
Madras
Lhasa
Urga
Manila
Tokyo
Cairo
Rome
Berlin
London
Vienna
Oslo
Stockholm
Copenhagen
Athens
Karachi
Muscat
Aden
Bangkok
Samarkand
Tashkent
Omsk
Tobolsk
Yenisei
Lena
Lake Baikal
C. Chelyuskin
Western Ghats
C. Comorin
C. Guardafui
Greenwich
Longitude East from Greenwich

Its inhabitants are nomads, or dwellers in the oases formed by the mountain streams. Between the Kuen-lun and the Himalayas is the lofty *Plateau of Tibet.* It is from two to three miles above the sea. Therefore the winters are very cold, and even during the summer frosts are not unusual. In the lower parts of the plateau grass is found, and the people are nomads. In a few of the lowest valleys crops may be raised, and here the inhabitants live in permanent villages.

A typical Tea-bush of Eastern Asia

The most useful animal of the Tibetan Plateau is the yak. This is a big, clumsy-looking beast, something like an ox, with long, shaggy hair. The yak is very sure-footed and is valuable as a beast of burden in the mountains. Its flesh and milk are used for food. The Tibetans also pasture many sheep.

The Pacific slope is very different from Inner Asia. The summer winds blowing from the Pacific bring a heavy rainfall. There are many navigable rivers. The two largest of these, the *Hwang* and the *Yangtze,* have built up a fertile plain along many miles of the coast. These factors, taken together, make a land which can support many people in comfort.

Upon the hillsides of the Pacific slope is grown the tea-bush, one of the most important cultivated plants of Eastern Asia. It is a low, spreading bush with dark green leaves, which flourishes in the rich, moist soil of China and Japan. The dried leaves of this plant are the *tea* of commerce. Silk, too, is produced in large quantities. It is made from the delicate fibres with which the silk-worm weaves its cocoon. This worm thrives especially well upon the leaves of the mulberry tree. Thousands of these trees are grown in Eastern Asia to provide food for the silk-worm.

The people of Eastern Asia are *Mongolians.* They are divided into many races, including the *Japanese*, the *Chinese*, and others of less importance. All these nations have the general characteristics of the Mongolian race, but their languages, customs, and character differ widely.

Most of the people of Eastern Asia are *Buddhists.* Some believe in *Taoism*, which teaches that there are all sorts of evil spirits which man must fear and propitiate. Others follow the teaching of *Confucius*, which enjoins the worship of ancestors. Many of the people of China believe in all three religions.

THE SOVIET REPUBLICS

Lying across the entire northern part of the continent from the Caspian Sea to the Pacific Ocean is an immense area, formerly known as *Siberia* and *Turkestan.* This section of Asia is divided into a large number of small states, republican in their form of government, and all members of the Union of Soviet Socialist Republics, which have their headquarters at Moscow in Europe. *See page 191.* The area of this territory is estimated at almost 5,000,000 square miles, with a population of about 17,000,000.

THE NORTHERN SECTION

Surface and Drainage.—The surface of the northern part of this vast territory is much like that of Canada. South of the tundra, which lies along the Arctic Ocean, is a vast forest belt. South of this again are the broad *Khirgiz Steppes*; while still farther south and in the eastern sections there are highlands, of which the greater part is heavily forested. The drainage is mainly into the Arctic Ocean, by means of the three great rivers, the *Ob*, the *Yenisei*, and the *Lena*. The *Amur River* drains the south-eastern section into the *Sea of Okhotsk*.

The largest lake in this section, in fact in all Asia, is *Lake Baikal*, which is situated in the extreme southern part of the country on a high plateau surrounded by mountains. It is nearly twice as large as Lake Ontario and very much deeper than Lake Superior. It has extensive herring and sturgeon fisheries and is an important commercial route between this section and China.

Climate.—The climate of the country is very similar to that of the tundra, forest, and prairie sections of Canada. The severity of the winter increases from the west to the north-east.

Natural Resources.—The agricultural possibilities of this section are great, but as yet comparatively little of the land is under cultivation. There are many districts entirely given up to the raising of cattle, horses, goats, and sheep. The principal crops are wheat, oats, and rye. Butter and cheese are both exported in large quantities.

The immense forest areas have at present very little commercial value, on account of the lack of transportation facilities. The forests, however, are the home of large numbers of fur-bearing animals, whose skins are a source of wealth to the people. The mineral wealth of the country is also great, but again the lack of railways has hindered the development of the mines. The most important minerals are gold, silver, copper, iron, zinc, and graphite. Coal is also found, but it is not of a good quality. The manufactures are few, the chief being flour-milling and the smelting of minerals.

Cities and Towns.—There are but few cities or towns of any great importance. The principal cities—*Omsk, Tomsk, Irkutsk*, and *Vladivostok*—are all on the Siberian Railway, which connects Leningrad, in Europe, with the Pacific Ocean. Omsk lies in the midst of a rich agricultural country, while Tomsk and Irkutsk are in the mining districts. Vladivostok is the eastern terminus of the Siberian Railway. It has an excellent harbour, which, however, is frozen for three months of the year. The city has many factories and machine-shops.

THE SOUTH-WESTERN SECTION

Surface, People, and Products.—The surface of the south-western part of the Soviet territory differs greatly from that of the northern section. It is for the most part dry and good only for pasture. In fact, more than half of the land is so dry that it is not even fit for grazing sheep. Most of the inhabitants are nomads, pasturing flocks of sheep and goats on the steppes. In the

Vladivostok, the Terminus of the Siberian Railway river valleys, cotton, silk, tobacco, rice, sugar-cane, fruits, and millet are cultivated with the help of irrigation. Khiva and Bokhara are famous for their beautiful rugs, woven by hand from the wool and goat-hair produced in the country.

Towns.—*Tashkend*, *Samarkand*, *Bokhara*, *Khiva*, and *Merv* are the principal places. Bokhara is a famous Mohammedan city. In it are hundreds of mosques and Mohammedan institutions of learning.

Idle Men in Bokhara, Central Asia
These men are Moslems under Soviet rule.

TRANSCAUCASIA

Extent, People, and Products.—Lying to the south of the European Soviet Republics, between the *Black* and *Caspian Seas*, is a large district known as *Transcaucasia*. It is separated from the other Soviet Republics in Asia by Persia. It contains three states—*Azerbaijan*, *Armenia*, and *Georgia*. The area of the three republics is 75,000 square miles, with a population of about six millions.

Running across the country from east to west are the lofty *Caucasus Mountains*. The vegetation on the north side of the mountains is scanty, while on the southern side there are magnificent forests and large stretches of fertile land, where grapes, figs, chestnuts, cotton, and corn are cultivated. The chief wealth of the country is drawn from its oil-fields, which rank among the most productive in the world.

Cities.—The centre of the oil industry is at *Baku* on the Caspian Sea. A railway connects Baku with *Tiflis*, the most important commercial city, and thence with *Batum* on the Black Sea. From Baku boats cross the Caspian Sea to connect with a railway line which runs eastward through Merv and Bokhara, thus connecting Transcaucasia with the other Soviets.

TURKEY

Extent and People.—The territory of the republic of *Turkey* in Asia includes the whole peninsula of Asia Minor, and the lands bounded by Caucasia, Persia, Iraq, and the Mediterranean and Aegean Seas. In area Turkey, or *Anatolia*, is somewhat larger than Alberta, while the population is considerably larger than that of Canada. The republic also includes about 9,000 square miles in Europe, with a population of about 1,200,000. The *Ottoman Turks*, the descendants of Mongolian tribes who invaded Asia Minor in the thirteenth century, form the ruling class among a population of many diverse races. They are fanatical Mohammedans and have always been noted for their cruel persecution of Christian races under their control.

Surface and Climate.—The surface of Turkey in Asia is very rugged, but there are along all the coast low, narrow plains, some of extraordinary fertility. The interior is an elevated plateau, with mountains on the north and the south, and low, parallel ranges between. The coast on the *Black* and *Aegean Seas* is generally bold and precipitous, while along the *Sea of Marmora* it is flat and low. Along the *Mediterranean* there are many bays and inlets. The climate varies with the elevation. In the interior the winters are cold. The regions along the sea-coast have long been celebrated for their warm and genial climate.

Resources and Industries.—The natural resources of Asiatic Turkey are great, but the indolent Turks have in the past neglected to take advantage of them and have even refused to allow them to be developed. There are large timber areas among the mountains. Many minerals, such as copper and manganese, are found. Petroleum and rock-salt are valuable products. In many sections the soil is very rich, so that tropical fruits, tobacco, cotton, olives, raisins, barley, wheat, maize, and figs are profitable crops. In some of the drier districts irrigation is necessary. The peasant farmers, however, still continue to use the simplest methods of agriculture and raise little more than they require for their own needs. Among the mountains and on the plateaus sheep and goats are raised, particularly the Angora goat, from whose wool a valuable cloth is made. Sponges are obtained from the Aegean Sea.

Cities.—*Smyrna*, on the Aegean Sea, and *Trebizond*, on the Black Sea, are the two most important ports of Asiatic Turkey. *Angora* is the capital of the republic.

SYRIA omit

Size and People.—*Syria* was taken from Turkey by the Allies after the Great War and placed under the government of France. It is about one-seventh of the size of Ontario, with a somewhat smaller population, chiefly of Arabs.

Surface and Climate.—Syria is a tableland, with parallel mountain ranges running from north to south near the coast. East of the mountains the surface slopes toward the *Syrian Desert*. The rivers are small, and most of them are lost in the desert sands. The summers are long, hot, and dry, the winter being the rainy season. Irrigation is necessary over the greater part of the country.

Resources and Industries.—Along the coast and in the valleys are cultivated crops similar to those of Asiatic Turkey. Many of the Syrians are herdsmen, raising sheep and goats, and in the desert regions, camels. Sponges are an important article of export. Leather, woollen and silk goods, and jewellery are made by skilled craftsmen.

Cities.—The principal seaport of Syria is *Beirut*, which is connected by rail with *Damascus*, the chief city. Damascus is also the terminus of one of the great overland camel routes to Persia.

CYPRUS

In the Mediterranean Sea, sixty miles west of the Syrian coast, lies the island of *Cyprus*, a possession of Great Britain. The surface consists of a low central plain with mountains on the north and the south. The mountains are covered with forests of valuable timber. Silk, wine, and sponges are the most important products. The island is noted for its camels and mules. The chief town is *Nicosia*, near the centre of the island.

PALESTINE omit

Size and People.—*Palestine*, the homeland of the Jews, is a small country, being less than half the area of Nova Scotia. Out of a total population of 820,000, about 575,000 are Arabs and 155,000 are Jews.

Surface and Climate.—The surface of Palestine resembles that of Syria; in fact, it is but a continuation southward of that country. Between the eastern ranges and the mountains which parallel the coast on the west lies the valley of the *Jordan River*. In its course this river expands into the *Sea of Galilee*. It empties into the *Dead Sea*. The surface of the Dead Sea is far below the level of the ocean. Its waters are so

A Caravan of Camels on the Jericho Road, Palestine salty that fish cannot live in them. From February until October rain scarcely ever falls in Palestine, and the heat during that period is very oppressive. In the winter season rain is very plentiful.

Resources.—Palestine is by no means a rich and fertile country. Yet the soil is good, and when properly irrigated, yields abundantly. The British government has now taken in hand the construction of a system of irrigation dams and canals. In the coastal region wheat, barley, vegetables, olives, and fruits, especially grapes, are cultivated. Much of the interior surface is desert, and the remainder is given up to flocks of sheep and goats in charge of their Arab shepherds. The chief exports are oranges, lemons, wine, olive oil, and laundry soap. There are enormous salt and potash deposits in the Dead Sea.

The Mosque of Omar, Jerusalem

Cities.—*Jerusalem*, the chief city of Palestine, is situated on a rocky plateau thirty-five miles from the coast. It is connected with *Jaffa*, its seaport, by a line of railway.

Trans-Jordan.—Recently, that part of Palestine lying across the Jordan River was formed into an Arab kingdom under the name *Trans-Jordan.* The population, almost entirely Arab, is about 260,000.

IRAQ (MESOPOTAMIA) omit

Size and People.—*Iraq*, which was formerly a Turkish province, is now an independent kingdom under British protection. It is about one-third of the size of Ontario. Its inhabitants number almost three millions.

Surface and Climate.—The surface is mainly a low-lying plain. In former days most of the plain was well cultivated, and, with the aid of irrigation, yielded large crops. Under Turkish rule, however, the irrigation canals were not kept in good condition. To-day the greater part of the country, except along the river banks, is a desert. Now that Iraq has a settled government, irrigation works to distribute water from the *Tigris* and *Euphrates Rivers* will undoubtedly be constructed. Very little rain falls at any season of the year. The climate is extremely hot in summer, so hot, indeed, that during that season many of the inhabitants live in underground chambers.

Products and Transportation.—The principal products are dates, gumarabic, rice, cotton, and various cereals. Camels and sheep are raised, and wool and hides are important articles of commerce. The country is exceedingly rich in oil, and there are extensive asphalt deposits. Communication is carried on chiefly by means of the roads, rivers, and canals. The country has about 750 miles of railway.

Cities.—*Bagdad*, on the Tigris, is the chief city of Iraq and is connected with *Basra*, its port, by rail. It is noted for its manufactures of leather and plush. *Mosul*, in the centre of the oil district, is of great importance.

ARABIA omit

Size and People.—*Arabia*, the country of the Arabs, is about one-third of the size of Canada. The population is small for the vast extent of country, being about seven million. In addition to a large area of land under no organized government, Arabia contains the three kingdoms of *Hejaz-Nejd*, *Oman*, and *Yemen*, and several smaller states.

Surface, Climate, and Products.—The surface is for the most part a high plateau, with mountains on the west and south-west. The interior is a sun-baked desert. Rain scarcely ever falls, except in the south-west in the fertile kingdom of *Yemen* and in *Oman*. In those districts, coffee, tropical fruits, almonds, and vegetables are cultivated. The upper hills produce gumarabic, aloes, and cassia. In the oases of the desert the date-palm flourishes, while the wandering Arabs have large herds of camels, sheep, goats, and donkeys, which they drive from one oasis to another in search of pasturage and water. The Arabian horse is celebrated for its beauty and its speed.

Cities.—There are but few places of any importance in Arabia. *Mocha*, famous for its coffee, is situated in Yemen. Hejaz-Nejd derives its chief importance from its possession of *Mecca* and *Medina*—the sacred cities of the Mohammedans. The chief city of Oman is *Muscat*, a seaport on the *Gulf of Oman*.

ADEN AND PERIM

On the south coast of Arabia lies the peninsula and town of *Aden*. This whole territory, which includes the island of *Perim*, belongs to Great Britain, and has an area of eighty square miles, with a population of 55,000. The town of Aden has a commodious harbour and is a coaling-station for ships passing through the Suez Canal. It is very strongly fortified. There is so little rain that, in order to supply the people with drinking-water, the British government has been compelled to construct reservoirs for storage purposes. Fuel and food are necessarily imported.

PERSIA

Size and People.—*Persia* is about one and a half times as large as Ontario, with a population about the same as that of Canada. The Persians, who belong to the white race, are nearly all Mohammedans.

Surface, Climate, and Products.—The whole of Persia is an elevated table-land, with many mountain ranges. The climate is very dry, and only a few districts are suitable for agriculture. The most fertile belt is along the *Caspian Sea*, where cotton, tobacco, poppies, wheat, and barley are grown. The mulberry tree is cultivated, and also roses for the manufacture of attar of roses. In the oases the date-palm furnishes an abundance of dates. The raising of goats, sheep, horses, and camels is the principal occupation of the people.

Arab Scout with his Arabian Horse

Manufacturing is carried on chiefly by hand, Persia being famous for its shawls, rugs, and tapestries, as well as for hand-carving both in wood and in brass. The pearl fisheries of the *Persian Gulf* are very valuable. There are immense oil-fields in southern Persia, which are under the control of British companies.

Cities.—The principal city is *Teheran*, at the base of the *Elburz Mountains*. It is a typical eastern city, with small, brick houses and narrow, filthy streets. *Tabriz* is another important city, with many manufactures, particularly carpets and rugs.

AFGHANISTAN

Size and People.—*Afghanistan* is somewhat more than one-half of the size of Ontario. The Afghans, about eight million in number, are all Mohammedans. They are a very brave but very cruel race.

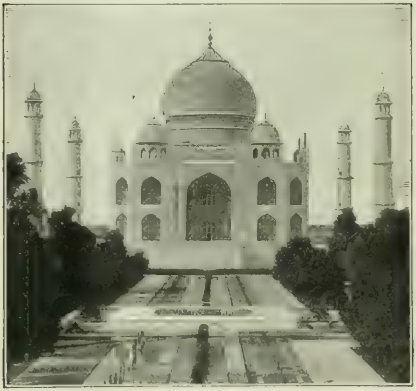
Surface and Products. — Although the north-western part of the country is within the *Plateau of Iran*, most of the surface towers above this plateau in table-lands, varying in height from four to seven thousand feet above sea-level. The *Hindu Kush Mountains* enter the country from the north-east. High mountains separate Afghanistan from India, but communication is maintained through the celebrated *Khyber Pass*.

Although much of the surface is rugged and other parts are sandy and arid, yet there are many fertile valleys and lowlands, where good crops are raised with the help of irrigation. The principal cereals are rice, millet, corn, wheat, and barley. Fruits, such as apples, pears, peaches, and cherries, grow well and form one of the principal articles of diet of the people. Shawls, carpets, and dried fruits are important articles of export.

Cities.—The principal cities are *Kabul*, the capital, *Kandahar*, and *Herat*.

INDIA

Position, Extent, and People.—The *Empire of India* includes not only the peninsula between the *Arabian Sea* and the *Bay of Bengal* and the country northward to the *Himalaya Mountains*, but also the territory bordering on the eastern coast of the Bay of Bengal as far south as the *Isthmus of Kra* on the *Malay Peninsula*. Both the French and the Portuguese have several small settlements. In the north are the independent states of *Nepal* and *Bhutan*. With these exceptions, the entire country either belongs to Great Britain or is within the sphere of her influence. The total area of India is about 1,800,000 square miles, of which 1,100,000 square miles is directly under British rule. The total population is about 35[illegible],000,000. = 353,[illegible]



The Taj Mahal, Agra, India

This noble monument, with its graceful minarets and stately dome, was erected at Agra by the Mogul emperor, Shah Jahan, in memory of his wife. The building was completed in **1632**, and it is said that it took **20,000** workmen twenty-two years to build it. It is of white marble throughout, inlaid with precious stones.

Surface.—The northern part of India is covered by lofty and rugged mountains, which rise more or less abruptly from the plain beneath. Of these the highest are the Himalayas, which contain some peaks having an altitude of over four miles. South of the mountains lies a great lowland plain. This is drained by the *Indus River* and the *Ganges*, with its tributary, the *Brahmaputra*. The plain is from 150 to 300 miles in width and stretches across the country from the borders of *Baluchistan* on the west to the highlands of *Burma* on the east. This is the most densely populated section of India and also the most important industrially.

South of the great plain lies the Plateau of the *Deccan*, which occupies the greater part of the peninsula. It is a table-land bordered on the east and the west by the *Eastern* and *Western Ghats*. The plateau is by no means level, but is very broken and rocky. Between the Eastern Ghats and the Bay of Bengal there is a low coastal plain. The western coast is bordered by barrier beaches, which provide good harbourage for vessels.

The surface of Burma is very mountainous, with parallel ranges running north and south, and narrow valleys between. The most important river is the *Irrawaddy*, which flows from the northern border to the Bay of Bengal.

The mountainous regions of India, the Himalayas, part of the Deccan, and Burma, are covered with immense forests, while the plain of the Ganges has much jungle land.

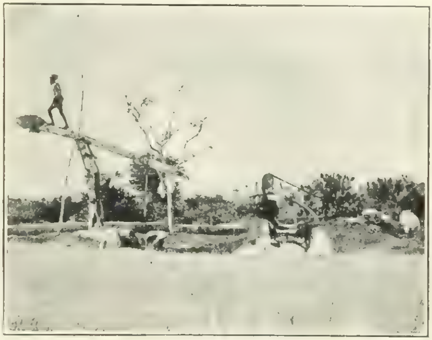
Bullock Cart used by the Natives, India

Climate.—Owing to its position, India is swept by monsoon winds throughout the year. In the winter, when the northern monsoon blows, the climate is dry and cool, but not cold, because the high mountain wall cuts off the very cold winds from the great interior of Asia. In the summer the southern monsoon, blowing from the warm oceans, brings heavy rain and high temperatures to a large part of the country. The valley of the Indus is so far north that the monsoon winds blow less regularly there. In this part of India extremely dry summers are not unusual. Before the development of irrigation the people frequently suffered from famine.

Preparing Jute, India

After the jute is cut, it is tied into bundles and placed in stagnant water. The fibre, after being thoroughly soaked, is beaten or shaken until all the resinous matter is removed.

Industries.—India is a great agricultural country. With so great a population, the production of food for the people is the chief occupation. More than a tenth of the cultivated area is devoted to rice. Wheat ranks second and furnishes one of the chief exports to Great Britain. Millet, one of the chief foods of the poorer classes, is also an important crop. Cotton, raised principally in the Deccan, furnishes the raw material for many cotton-mills and for export. Tea is extensively grown in the foot-hills of the Himalayas, in Bengal, and in other sections, and it forms one of the principal exports of the country. Jute, a very valuable coarse fibre used for making ropes and bags, and flax, indigo, sugar-cane, coffee, and tobacco are other leading crops. Seeds, such as the castor-bean, rape, and mustard, and various spices, such as cinnamon and pepper, are exported. Cattle are raised in large numbers, mainly for domestic use. In the cultivation of the soil the people use the buffalo and, in the drier parts, the camel.



A Native Pump, India

The motive power of this pump is the man who walks along the beam. As he reaches the end, his weight raises the water bucket.

The chief product of the forests is teakwood, much used in ship-building and in furniture-making. Pines, firs, and junipers grow in the immense forests of the Himalayas. Other valuable trees are the bamboo, the banyan, and palms of several kinds.

India is rich in minerals, the principal being coal, iron, gold, petroleum, and salt. The coal, however, is of poor quality, so that the smelting of iron is a somewhat costly operation. The mines are but little worked. Many precious stones are found in the country. The rubies and sapphires of Burma are said to be the finest in the world.

As yet manufacturing is not a leading industry in India. There are, however, large cotton and jute factories, which employ three-quarters of a million people. A great deal of the manufacturing is done by the people in their own homes. Carving in ivory, fine embroidery, and silk and carpet weaving are the most important.

A Village Scene, India

Cities and Towns.—Of the enormous population of India, only one-fifth live in the cities and towns. *Bombay*, the ~~largest~~ city, has a magnificent natural harbour. It is situated on an island off the west coast and has many cotton factories and a large export and import trade. The ~~second~~ city is *Calcutta*, situated ninety miles from the sea on the *Hoogly River*, one of the mouths of the Ganges. It is a great commercial city. *Madras*, on the Bay of Bengal, is the seaport and commercial centre of the south-eastern part of the country. *Benares*, situated on the Ganges, is the sacred city of the Hindus and is visited by tens of thousands of pilgrims annually. *Hyderabad* is the largest city of the interior. *Karachi*, on the west coast, is the centre for the export of wheat. *Delhi*, the capital of India, *Lucknow*, and *Cawnpore* will always be remembered for the events that took place there during the Indian Mutiny. *Simla*, in the foot-hills of the Himalayas, is a favourite resort for Europeans during the hot season on the plains.

In *Burma* are two important cities, *Rangoon* and *Mandalay*. The former, situated on the river of the same name, has a good harbour at high water and a large trade. The latter, located on the Irrawaddy River, is noted for its silk-weaving and fine carving.

Baluchistan. — *Baluchistan* is about one-third of the size of Ontario. The population of about 800,000 is under the nominal rule of a Khan, but in reality Baluchistan is subject to Great Britain. The natives are cruel and treacherous in their dealings with other tribes. The principal towns are *Kalat*, the capital, and *Quetta*, an important British military station.

The surface consists mainly of table-lands, mountains, and high valleys. Owing to the absence of rain the country is almost entirely a desert, but there is some fertile land, and on this are cultivated crops very similar to those of India.

The Indian Islands.—The *Andaman Islands* in the Bay of Bengal are used by the Indian government as a penal settlement. The islands are thickly wooded. The *Nicobar Islands* are also in the Bay of Bengal. The chief exports are cocoa-nuts and timber. The *Laccadive Islands*, 200 miles west of India in the *Arabian Sea*, export cocoa-nuts and cocoa-nut fibre. All these islands are included in the Indian Empire.

Nepal and Bhutan.—*Nepal* has an area about the same as that of the Maritime Provinces, and a population of 5,600,000. The soil is very fertile. The valleys and the terraced hillsides yield wheat, rice, tobacco, and spices. Many minerals are found, and the forests contain valuable timber. There are many tribes, but the most interesting are the Goorkhas, who have joined the Indian army in large numbers.

Bhutan has an area about one-third as great as that of Nepal, with a population of about 300,000. The entire surface is mountainous, with high peaks and enormous glaciers. The forest wealth of the country is great.

CEYLON

Position, Extent, and People.—The island of *Ceylon* lies a short distance off the south-east coast of India. It is a crown colony of Great Britain. In this island, which is about one-half the size of England, live 4,500,000 people, only about 8,000 of whom are Europeans. The population is made up of many native tribes. The capital is *Colombo*, a coaling-station for vessels.

Surface, Climate, and Products.—In the northern section of the country the surface consists of a flat lowland, but the centre and the south are mountainous. The south-western part is the most fertile, as it receives an abundance of rain from the monsoons. There immense tea plantations are situated. About one-fifth of the total area of the island is under cultivation. Tea, rubber, cocoa, tobacco, copra, and spices are exported, largely to Great Britain. Nearly half a million acres are planted with rubber trees. Rice, cotton goods, and coal are the chief imports. Ceylon has always been celebrated for its precious and semi-precious stones, the ruby, sapphire, amethyst, moonstone, and garnet being the most valuable. Graphite is mined in very large quantities, and iron and anthracite coal are also found. The island is noted for its pearl fisheries.

A School for Natives, Ceylon

The Maldive Islands.—The *Maldive Islands*, a group of thirteen small coral islands 400 mile south-west of Ceylon, are administered by the government of Ceylon. About 70,000 people live there. Copra and tortoise-shell are the chief exports.

CHINA

Divisions, Extent, and People.—The republic of *China*, which occupies the central portion of Eastern Asia bordering on the Pacific Ocean, consists of five great provinces—*China, Tibet, Sinkiang, Mongolia*, and *Manchuria*. In extent it is somewhat larger than the whole of Canada, and it has a population of 440,000,000, nearly all Mongolians. For a long time the Chinese did their utmost to keep foreigners and foreign knowledge out of their country. Now, however, western customs and ideas are rapidly gaining ground.

CHINA PROPER

Surface and Climate.—*China* occupies one-third of the surface of the Republic and almost all the coast-line. It is divided into three great plains by two mountain chains, which extend eastward from Tibet.

Northern China is a vast plain, the most

Yellow River

densely populated district in the world. This plain is drained by the *Hwang River*, which, in its course through the lowlands, frequently overflows its banks and brings disaster to the people. For this reason the river is called "China's Sorrow." The surface of the plain is covered by yellow soil and is so fertile that it produces heavy crops without the aid of fertilizers.

The Great Wall at Nankow Pass, China

Central China is drained by the *Yangtze River*. This river is 3,500 miles in length and is the chief commercial highway. The soil of this central district, of a rich, red colour, is very productive.

Southern China is drained by the *Si River* and its tributaries. The soil there is not quite so good as in the other two great plains.

The climate of China varies from a temperate in the north to a tropical in the southern region. All the south lies within the influence of the monsoons, and the rainfall is very heavy. Farther north the rainfall is less, but sufficient for agriculture. In late summer and early autumn the *China Sea* is visited by *typhoons*—fierce hurricanes which have their source in the East Indies. Raging along the coast and sweeping great waves before them, they sometimes do great damage to the coastal plains of China.

Industries.—In China the tiller of the soil is held in honour next to the scholar. The people are skilful and industrious farmers and make use of all available ground. Irrigation is employed in the north and in the rice-fields of the south. North of the Hwang River millet and barley are grown. The central zone, where the winters are milder, produces rice, wheat, tea, sugar-cane, and bamboo. There enough rice is grown to feed the entire population. The eastern section is famous for its silk and cotton.

The staple product of China is, of course, rice, and next in importance is silk. The mulberry tree is widely cultivated in the centre and the south, while in the north the silk-worms are fed on a species of oak. China is famous for its tea, which is exported in immense quantities.

China is singularly lacking in forests. There is not even sufficient wood to make coffins for the dead, and the most valued gift that a son can make to his parents is a coffin. The mountains are exceedingly rich in minerals, but little prospecting has been permitted by the Chinese government. It is definitely known that China has at least twenty times as much coal as there is at present in the British Isles. Iron and pottery clay are abundant.

Modern manufacturing has not been developed to any extent in China. As the Chinese fear that the introduction of machinery will deprive them of their work, they still continue to manufacture by hand.

Interior communication is poor, the only means of transportation being the waterways and a few bad roads. The building of railways, however, is being encouraged by the government, and a system centring in Peiping is under construction. In late

Farm Landscape and River Ferry, Central China

years foreign commerce has increased rapidly, and China now ranks third among the trading nations of Asia. Trade is carried on principally with Great Britain, Japan, and the United States.

Cities and Towns.—*Nanking*, on the Yangtze River, is the capital of China. *Peiping*, formerly *Peking*, until recently the capital, is a leading commercial city. Its port is *Tientsin*. *Hankow*, on the Yangtze River, is the principal city in the interior. *Shanghai* is an important port, with a beautiful harbour and large manufacturing interests. *Canton*, the chief city of the south, is a great commercial centre and is connected by a steamship line with *Hong Kong*.

TIBET

Tibet, the most elevated region in the world, is a mountainous plateau. The summers are short and hot, while the winters are very severe. In the valley of the *Brahmaputra River* and in the south, crops, chiefly barley, are raised with the aid of irrigation. The greatest wealth of the country comes from the large herds of sheep, goats, horses, and yaks. The last are used as beasts of burden. Minerals are found everywhere, but are little mined. Cashmere wool is the chief export.

Lhassa is the capital of Tibet. The Grand Lama, as the ruler and chief priest of the land is called, lives there. Tibet has bound itself not to enter into relations with any foreign country without the consent of Great Britain. Chinese control over Tibet is more nominal than real.

SINKIANG

Sinkiang, also known as *Chinese Turkestan*, lies to the north and west of Tibet. The surface is mainly an arid table-land, with fertile districts on the steppes and in some of the river valleys. In the arid sections are oases, which have been made more fertile by irrigation. Carpets, linens, cotton, and silks are manufactured, and also articles of gold and silver. The total population is very small. The chief towns are *Kashgar* and *Yarkand*.

MONGOLIA

Mongolia lies between China and Siberia. The surface consists mainly of mountain ranges and the great *Desert of Gobi*. Part of the surface, however, is poor steppe land, upon which the nomadic inhabitants pasture horses, sheep, and camels. The people are Buddhists and regard the capital of their country, *Urga*, as a holy city.

MANCHURIA

Manchuria lies to the east of Mongolia and to the south of Siberia. In the river valleys of the northern part of the country the soil is fertile, while in the southern section, though part of the surface is a salt desert, there is much good land. Large crops of wheat, barley, beans, peas, and fruits are grown. Many cattle are raised. The forests are filled with valuable timber, the rivers supply salmon, which are caught and cured for winter use, and the mountains are rich in coal, iron, gold, and silver, though little mining is done.

The Waterfront of Canton, China

The majority of the people are *Chinese*, but Japan and the Soviet Republics have wide influence in the country. The railways, with which the country is well supplied, belong to the Soviets, while the important ports of *Dairen* and *Port Arthur* belong to Japan. *Mukden*, the capital, is an important military centre on the Siberian Railway, with a large export and import trade.

HONG KONG

The island of *Hong Kong*, almost opposite the mouth of the *Si River*, belongs to Great Britain. With the peninsula of *Kowloon*, on the mainland opposite, it makes up the crown colony of *Hong Kong*. The island is thirty-two square miles in extent, with a rocky surface. The city of *Victoria*, the capital of the colony, stretches along the heights above the harbour for four miles and is one of the most beautiful cities in the East. The harbour is magnificent. Hong Kong is a distributing centre for the imports and exports of Eastern Asia. It is also a very important British naval station.

The Harbour of Victoria, Hong Kong

JAPAN

Position, Extent, and People.—The *Japanese Empire* consists of five large and several hundred smaller islands, which extend along the east coast of Asia. The Empire includes also the peninsula of *Korea*, which, when added to Japan some years ago, was re-named *Chösen*. The area of the entire Empire is a little larger than that of Alberta, and the population is in the neighbourhood of 85,000,000.

The people of Japan are largely Mongolians. They are a very artistic people, who take delight in producing what is beautiful. They love their land and use their skill as gardeners to make it still more beautiful. They are exceedingly industrious and skilful, excelling especially in work requiring delicacy of touch and handling.

Though they retain many of their picturesque customs, the Japanese are the most intelligent and enterprising of the Eastern peoples. The young men are sent to Europe or to America to be educated and to bring back with them a knowledge of civilization other than their own. Japan now has railways, telegraphs, telephones, factories, schools, and universities.

Surface and Climate.—The surface of all the islands is very mountainous. There are few navigable rivers, and the rugged nature of the country makes the construction of railways both difficult and costly. Many of the towns and villages in the interior can be reached from the coast only by vehicles drawn by men. The mountains are volcanic in their origin, and many of them are still active. Earthquakes are so frequent that the Japanese are compelled to build their houses of very flimsy construction, in order to protect themselves against shock. Between the mountain ranges there are many fertile lowlands. On these and on the sides of the mountains agriculture is carried on. Only about one-sixth of the surface can be used for farming.

The climate of Japan varies from tropical heat in the south to extreme cold in the north. In general, however, all over the islands the climate is mild. The warm *Japanese Current* moderates the temperature, and, owing to the surrounding ocean, weather changes are neither sudden nor extreme. The rainfall is heavy. In the northern islands snow lies on the ground until May.

Industries.—The population of Japan is very dense, so that every available bit of land is cultivated intensively in order to provide food for the people. Few animals are kept, as these would consume too much food. In many places the mountain slopes are terraced in order to make room for more crops. In the south the chief products are rice, tea, sugar-cane, cotton, tobacco, flax, and hemp. Rice is the staple food of the people. In the north the cereals of the Temperate Zone are grown. Fruits grow plentifully, and the mulberry tree is widely cultivated. Japan produces much more silk than any other country in the world.

Sorting Tea, Japan

The natural resources of the islands are very great. The forests supply many valuable woods. Bamboo is used, when it is young, for food, and in a later stage for the manufacture of furniture and paper. The seas abound in fish, which are used as a steady diet by the Japanese. Over three millions of men are engaged in the fisheries. The chief minerals are coal and iron, but gold, silver, copper, and sulphur are also mined. There are many petroleum wells.

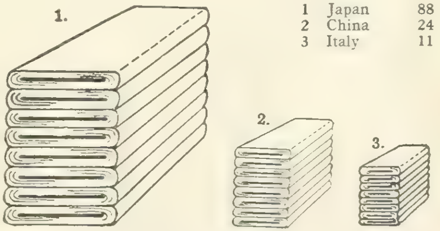
In some industries Japan has adopted Western methods of manufacture. Silk and cotton products are now made by the factory system. The making of paper, of machinery, and of tools are important industries. The Japanese continue, however, to produce articles peculiar to their own civilization, and their mattings and porcelain, their brass, straw, ivory, and lacquer-ware have never been equalled elsewhere.

Cities and Towns.—*Tokyo*, the capital, is a beautiful and progressive city, with modern street railways, hotels, and stores. *Yokohama*, the seaport of Tokyo, is a very busy commercial and shipping city. It is a port of call for Pacific liners, including the passenger boats and freighters that run from Vancouver to Japan and China. *Osaka*, the largest city in the Empire, has many cotton factories. It has, however, a poor harbour, so that its trade is conducted largely through *Kobe*, a neighbouring seaport. *Nagoya*, the third city in size, is a busy manufacturing centre. Other centres are *Nagasaki*, an industrial city and coaling-station, and *Kyoto*, the ancient capital of Japan, which has large manufactures and is a railway centre.

Chösen.—*Chösen*, formerly called *Korea*, is a mountainous land. In summer the rainfall is heavy. The winters are cold. The people resemble the Chinese in dress and customs. They are strong and fine-looking, but unprogressive.

Agriculture is the chief industry, the principal crops being wheat, barley, oats, and soya beans in the north, and rice, tobacco, silk, cotton, and fruit in the warmer lands of the south. Chösen has valuable forests and large deposits of coal, iron, gold, copper, and mica. Some stock is raised, and hides are among the exports of the country. The fishing industry is developing rapidly.

Production in Millions of Pounds



The Three Leading Silk-producing Countries of the World, 1928

The capital, *Keijo*, formerly *Seoul*, lies in the interior. *Fusan*, on the south-east coast, is the principal seaport.

Formosa.—*Formosa*, or *Taiwan*, is a very mountainous island about half as large as Nova Scotia. It is covered with dense forests, in which live many savage tribes. On the coastal lowlands rice and sugar-cane are raised, but the most important crop is tea. Practically all the world's supply of natural camphor comes from the forests of Formosa.

INDO-CHINA

General.—*Indo-China* includes the countries known as *Burma*, which we have already described, *Siam*, *French Indo-China*, the *Malay States*, and the *Straits Settlements*. The surface is a plateau, with numerous mountain ranges running from north to south and deep and narrow valleys between the ranges. The *Malay Peninsula* is a prolongation of one of the mountain ranges. There are large plains in the valleys and at the mouths of the numerous rivers, where deltas have been formed.

A Native House in the Malay Country

SIAM

Size and People.—The kingdom of *Siam*, with an area less than one-half of that of Ontario, maintains a population as large as that of Canada. *Bangkok* is the chief city and capital of the country.

Surface and Products.—Much of the country is hilly land, covered with forest and jungle, but the plain of the *Menam River*, which runs through the country from north to south, is of unsurpassed fertility. The yearly inundations of the Menam and the vast number of irrigation canals add to the productiveness of the soil. The staple crop is rice, but tobacco, cotton, sugar-cane, spices, tea, and coffee are also grown. Tropical fruits are abundant. Gold, zinc, tin, rubies, and sapphires are the chief mineral products. Teakwood grows among the higher hills and is floated down the rivers to the coast. The wood of the teak is so heavy that elephants are generally employed in its handling. Rubber trees are now being planted in large numbers, and Siam will soon rank among the important rubber-producing countries of the world.

FRENCH INDO-CHINA

Size and People.—This French colony is somewhat larger than Alberta, but it has a population twice as great as that of Canada. The people are nearly all Mongolians. Buddhism is the prevailing religion. *Hanoi*, the capital, in the northern part of the country, and *Saigon*, in the south, are the chief cities.

Surface and Products.—Both the surface and the products of *French Indo-China* are very similar to those of Siam. There are mountains in the northern part, but the greater part of the country is a lowland, with swampy tracts along the coast. The majority of the people live on the lowlands or in the valleys and deltas of the Mekong and other rivers. Rice, millet, raw silk, cotton, tobacco, sugar-cane, spices, fruits, tea, and coffee are the principal products. Ironwood, teakwood, and bamboo are exported. The mines yield coal in large quantities.

THE MALAY STATES AND THE STRAITS SETTLEMENTS

Position, Extent, and People.—The *Malay States* and the *Straits Settlements* occupy the southern part of the Malay Peninsula. The latter derive their name from their situation on the *Strait of Malacca*, which separates the island of *Sumatra* from the mainland. They are a possession of Great Britain. The Malay States, which include some of the neighbouring islands, are nine in number. Four of them are joined in a federation known as the *Federated Malay States*. The other five states have independent governments. All are under the protection of the British government. The area of the entire country is about the same as that of the Maritime Provinces. The population, mainly native Malays, is about 3,500,000.

Surface and Products.—Much of the country is mountainous, but there are many tracts of productive lowland. On the lowlands there are large plantations, which produce great quantities of rubber, as well as rice, sugar-cane, tapioca, coffee, spices, gums, and cotton. The greatest wealth of the country, however, is in its tin. More than half of the tin mined in the world to-day comes from this district. Most of the work in the tin mines and smelters is done by Chinamen.

Cities.—The two largest cities are *Malacca* and *Singapore*. The latter, situated on an island at the south end of the peninsula, is an important port and coaling-station. It is heavily fortified, and further works are under construction. Malacca also is of great strategic importance. It has ship-building yards, and close by are the largest tin-smelting plants in the world.

Hauling Rubber to the Wharves, Singapore

THE EAST INDIES

General.—Lying to the south-east and east of the continent of Asia is a wide-spread group of islands, which are collectively known as the *East Indies*, or the *Malay Archipelago*. Most of the islands are volcanic in their origin. The climate is tropical, with an abundance of rain. The people are principally of the Malay stock, and many of the tribes are extremely primitive. The total population is not fewer than fifty millions.

Volcanoes, Java

Sumatra.—*Sumatra,* which is separated from the Malay Peninsula by the Strait of Malacca, is almost half as large as the province of Ontario. It contains many mountain ranges, with eight active volcanoes. There are many large and fertile plains. The principal products are rubber, rice, sugar, coffee, spices, cocoa-nuts, sago, corn, and tobacco. Gold and coal are mined, and there are several rich petroleum districts. The island belongs to the Netherlands.

Borneo.—*Borneo* has an area about one-half of that of Ontario. The greater part of the island belongs to the Netherlands, but Great Britain has large settlements and protectorates, including *Sarawak* and *British North Borneo*, on the north-western coast. Borneo is mountainous in the interior, but there are many large coastal plains. The mountain forests produce sandalwood, teak, rubber, and camphor, while on the lowland plantations are cultivated cotton, sugar, sago, tobacco, coffee, tropical fruits, and spices. The minerals include coal, copper, iron, tin, nickel, and diamonds. There are valuable petroleum wells on the east coast.

Tapping a Rubber Tree, The East Indies

Java.—*Java* is almost twice as large as New Brunswick. The interior of the island is mountainous, but along the coast the surface is low and very fertile. Sugar, indigo, tea, sago, vegetable oils, cacao, rubber, and tobacco are the principal exports. The greater part of the world's supply of quinine comes from Java. The growing of tea has largely displaced the coffee-growing for which the island was long famous. The island belongs to the Netherlands.

Celebes.—*Celebes*, another island belonging to the Netherlands, is over three times as large as New Brunswick. The island is long and narrow, the surface mountainous, and the coast-line deeply penetrated by bays and inlets. The products are similar to those of the other islands of the East Indies. Cattle and horses are raised in great herds on the uplands.

The Moluccas.—The *Moluccas*, sometimes called the *Spice Islands*, resemble Celebes both in climate and in animal and vegetable life. They belong to the Netherlands. They are particularly noted for their nutmegs, cloves, and other spices, but export also tortoise-shell, trepang, sago, cocoa-nuts, and plumes of the bird of paradise.

The Philippines.—The *Philippines* belong to the United States. They consist of the two large islands of *Luzon* and *Mindanao*, and over 7,000 small islands, of which many, however, are mere rocks.

The surface of the larger islands is generally mountainous, but there are extensive lowlands with fertile soil. The most valuable crop is sugar-cane, a great deal of the product being manufactured at home. Not quite enough rice is raised for local needs. Hemp is another important crop. Tobacco of an excellent quality is grown, and cocoa-nut oil is one of the chief manufactures. The islands have minerals, but the mines have been little developed. *Manila*, on the island of Luzon, with a population of well over a quarter of a million, is the capital. It has an excellent harbour, and a large trade, principally with the United States. The University of Manila, supported by the government, is largely for the benefit of the natives.

Crushing Sugar-cane, The Philippines

AFRICA

THE CONTINENT AS A WHOLE

Map Questions.—What ocean separates Africa from South America? From Australia? What sea separates Africa from Europe? From Asia? Name the isthmus which joins Africa and Asia.

What two groups of islands are near the coast of Africa, not far from the *Strait of Gibraltar?* What large gulf is on the west coast of Africa? What is the southern tip of the continent called? Find a large island off the east coast of Africa. What separates it from the continent?

What large river flows into the Mediterranean Sea? What lake is its source? Name a large river flowing into the *Gulf of Guinea.* What river drains most of Central Africa into the Atlantic Ocean? What is the largest river of Africa flowing to the Indian Ocean?

What desert is crossed by the Tropic of Cancer? What desert is crossed by the Tropic of Capricorn? What lake and river are crossed by the equator?

Where are the *Atlas Mountains?* Where is the highland of *Abyssinia?* The most of the lowland of Africa?

A Ship passing through the Suez Canal

In what zones is Africa? In what zone is by far the greater part of the continent? Which is warmer, Central Africa or South Africa? Why?

Shape and Size.—Africa is naturally a vast peninsula, jutting out from the still vaster land mass of Eurasia, but man, who is always busily changing the face of the world for his own good, has made an island of it. A glance at the globe shows that ships from Europe can reach the *Isthmus of Suez* through the Mediterranean, and that ships from Asia or Australia can reach it through the *Red Sea.* Only a narrow strip of sand prevented them from making the voyage between Europe and Asia by this route instead of by the much longer way around the *Cape of Good Hope.* A Frenchman named De Lesseps undertook to cut a canal from the Mediterranean to the Red Sea. It took 25,000 men ten years to complete this great undertaking, but at last, in 1869, the canal was ready for traffic. The length of the canal is eighty-six miles. Through it about 6,000 vessels pass annually. Britain, the great maritime nation of the world, controls the *Suez Canal.*

If you run your pencil around the coast-line of Africa, you will be struck by the absence of long peninsulas jutting into the sea or of long inlets running into the land. On account of the extreme regularity of the coast-line, there are few good harbours in Africa. This is a considerable hindrance to the development of sea-borne trade.

Africa is very large. Its area is about 1,000,000 square miles more than that of North America. Asia alone of all the continents is larger than Africa.

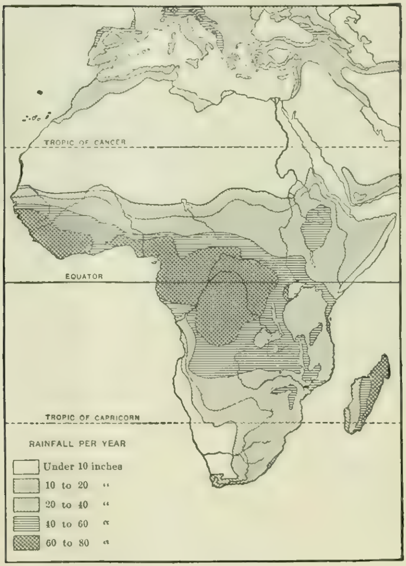
Surface.—Africa is one vast table-land, rimmed about with a narrow coastal plain. Everywhere, except toward the north, the central plateau slopes abruptly to the coastal plain. In the north, however, it passes more gradually into low-lying plains as it approaches the Mediterranean. The table-land is highest along the eastern edge, especially in *Abyssinia.*

Four rivers of Africa—the Nile, the Congo, the Niger, and the Zambezi—are among the great rivers of the world. Yet none of them provides a great highway into the heart of Africa as the St. Lawrence or the Mississippi does into the interior of North America.

They are all interrupted by cataracts or falls where they pass over the edge of the central plateau.

North Africa.—The north-west corner of Africa is far enough north to come within the belt of the westerly winds during the winter. The Atlas Mountains are sufficiently high to cool the winds and cause a fairly heavy rainfall. Therefore between the mountains and the sea is a beautiful, though hilly country, which produces excellent crops of grain and fruit.

The rest of North Africa is almost a rainless land. Most of it lies in the belt of the north-east trades. These winds, as you know, are dry winds, particularly when their course is over land. The trade-winds of North Africa come from the great continent of Asia. The winds which come over the Mediterranean Sea from the north are cool winds. As they move south, they become warmer, and so absorb, instead of giving out, moisture. Therefore the occasional winds which blow from the Mediterranean to Africa can bring little rain.



Rainfall Map of Africa

The rainless belt of Africa extends right from the Atlantic to the Red Sea, and from the coast of the Mediterranean as far south as *Lake Chad.* Its total area is greater than that of the entire continent of Australia. This is the *Sahara Desert,* the greatest in the world.

The surface of the desert varies a great deal. In some places the winds have swept the rock bare, in others there are beds of gravel, and here and there are vast stretches of sand. The sandy desert is ridged with dunes, or broken with rough hills. The colour of the rocks and sand also varies. All shades of yellow, red, brown, and even black, are to be seen.

Vegetation is, of course, very scanty, consisting mainly of thorny bushes which can stand the drought. Here and there, however, are little islands of green in the sea of sand and stone. In many places water wells up to the surface from some underground lake or river, and forms a centre for a grove of date-palms.

The crossing of the Sahara, while rather difficult and dangerous, is not impossible, owing to the numerous oases at which travellers can find water. In fact, it has for ages been a highway of trade in Africa. Large caravans, sometimes consisting of a thousand camels, carry goods between the Mediterranean coast and the lands of Central Africa. The main products of the desert are salt, which is plentiful there, and dates. The salt is taken by caravan to Central Africa, where it is highly valued. The dates are sent to the northern coast.

Although well-equipped caravans can cross the Sahara safely, yet the great desert has proved to be a formidable barrier to the free movement of men and animals. For this reason neither the inhabitants nor the animals of North Africa resemble those which are characteristic of the rest of the continent. The chief domestic animals, with the exception of the camel, are much the same as those of our own country. Donkeys and goats, however, are seen much more frequently than in Canada. The men of North Africa are also much like ourselves. The two chief races are the *Berbers*, many of whom are fair-haired and blue-eyed, and the *Moors*, a brown-skinned, dark-eyed people, who are the descendants of the *Arabs* who conquered North Africa many centuries ago. The Berbers are an agricultural people, who till the fertile coast-lands or the oases of the desert. Some of the Arabs have taken to the desert. These are wandering tribes, who roam the sandy wastes with their fleet horses and swift camels. They are known as *Bedouins*.

The desert is broken by one great river—the Nile. Its valley is the only extensive fertile strip in the whole desert area. The Nile rises away back in Equatorial Africa, in *Lake Victoria*. The heavy equatorial rainfall is so great that the volume of the Nile, even when it passes through the rainless desert, is always large.

The largest tributary of the Nile is the *Blue Nile*, which flows down from the highlands of Abyssinia. During the summer, when the sun is directly over this part of Africa, Abyssinia has torrential tropical rains. Then the Blue Nile becomes a roaring flood of muddy water, filled with soil washed from the fertile hills of Abyssinia. The volume of water in the Nile also increases during this season, so that it overflows its banks. When the floods are over and the water recedes, a thin layer of mud is left to fertilize the fields of Egypt. Much of the mud is carried right to the mouth of the river and deposited there. In this way, through many, many years, a plain of river mud has been built up at the river mouth.

Central Africa.—Toward the south the Sahara passes into scrub land, where a poor, thorny vegetation is fairly abundant, and this in turn becomes a grassy country dotted with clumps of trees. This great area of savanna land, as it is called, is the *Sudan*, a name which means black. It extends from *Cape Verde* on the west to the base of the Abyssinian Highlands on the east, and from the Sahara on the north to the forests of the Guinea coast and the Congo basin on the south. There is also much savanna land between the forests of the Congo basin and those of the east coast of Equatorial Africa.

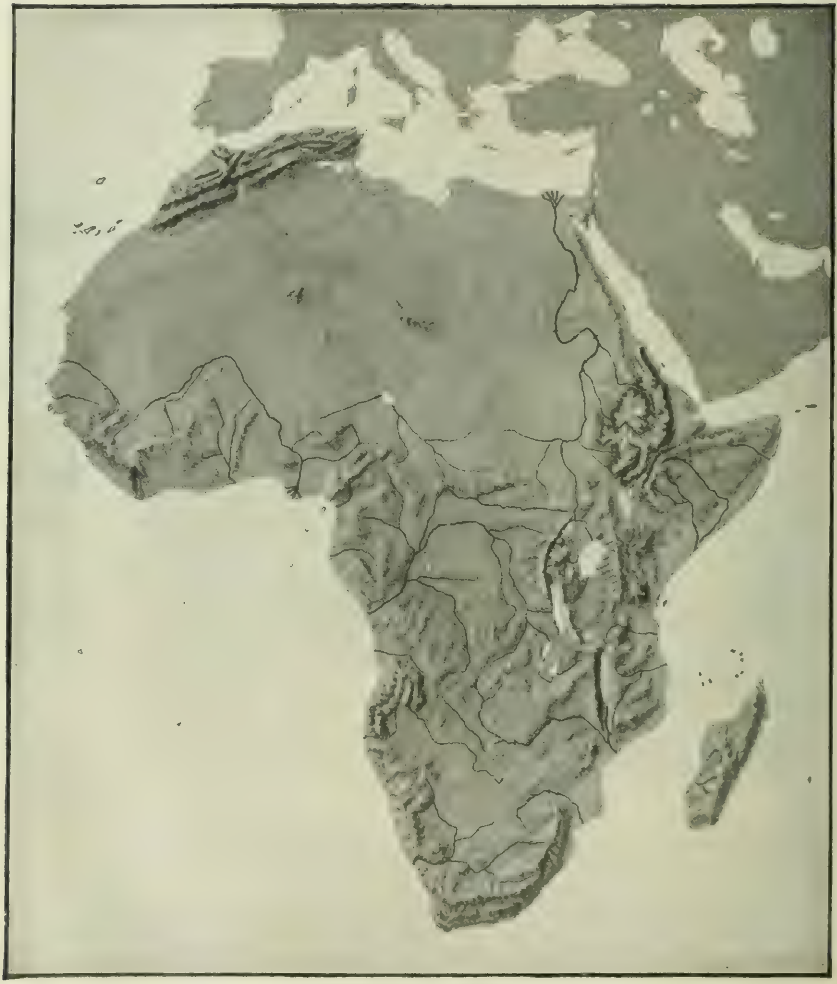
In the Sudan the natives are all Negroes, an entirely different race from the people of North Africa. The animals, too, are very different. The rank grass provides plenty of food for great herds of antelopes of many varieties, for buffaloes, giraffes, zebras, elephants, and rhinoceroses. Here, too, the flesh-eating animals abound. There are lions, leopards, and hyenas. The savannas of Africa are a sportsman's paradise.

A Caravan crossing the Sahara Desert, Africa

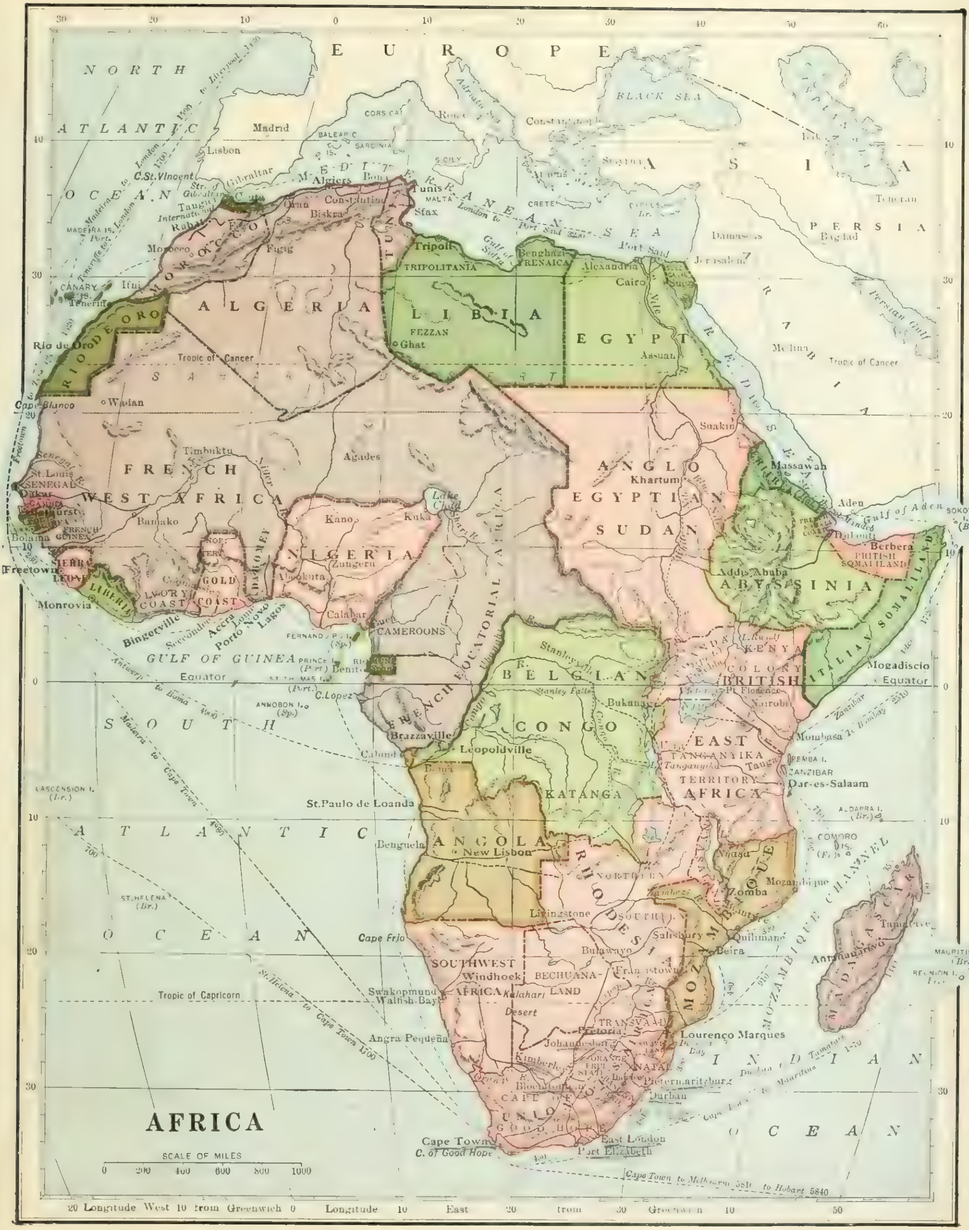
The coast of the Gulf of Guinea, the whole basin of the Congo River, and the east coast of Central Africa are covered with tropical forest.

Of life in the African jungle you have already read. Elephants, which are found in the savannas, also live in the forests, and their huge tusks are highly valued for their ivory. Rubber vines are abundant, and the natives gather a great deal of rubber for export to Europe. The rubber vines of Africa do not produce as good rubber as the trees of the Amazon valley. Rubber, ivory, and palm-oil are the three chief products of the African forests.

South Africa.—Toward the Tropic of Capricorn the savannas and forests gradually merge into more open land, much of which



RELIEF MAP OF AFRICA



AFRICA
SCALE OF MILES
0 200 400 600 800 1000
20 Longitude West 10 from Greenwich 0 Longitude 10 East 20 from 30 Greenwich 40 50
EUROPE
ASIA
NORTH ATLANTIC OCEAN
SOUTH ATLANTIC OCEAN
INDIAN OCEAN
MEDITERRANEAN SEA
BLACK SEA
RED SEA
ARABIA
PERSIA
Persian Gulf
Gulf of Aden
GULF OF GUINEA
MOZAMBIQUE CHANNEL
Tropic of Cancer
Equator
Tropic of Capricorn
Madrid
Lisbon
C.St.Vincent
Gibraltar
Str. of Gibraltar
Tangier International
Rome
Constantinople
Smyrna
Athens
Crete
Cyprus (Br.)
Malta
Sicily
Sardinia
Corsica
Balearic Is.
Damascus
Jerusalem
Bagdad
Teheran
Medina
Aden
Sokotra I. (Br.)
MOROCCO
Rabat
Morocco
Ifni
Madeira Is. Port.
Canary Is.
Teneriffe
RIO DE ORO
Rio de Oro
Cape Blanco
ALGERIA
Algiers
Oran
Constantine
Biskra
Figig
Bona
TUNIS
Tunis
Sfax
TRIPOLITANIA
Tripoli
LIBIA
FEZZAN
Ghat
CYRENAICA
Benghazi
Gulf of Sidra
EGYPT
Alexandria
Cairo
Port Said
Suez
Assuan
Nile
SAHARA
SAHARA DESERT
Wadan
FRENCH WEST AFRICA
Timbuktu
Agades
Senegal R.
St. Louis
SENEGAL
Dakar
GAMBIA
Bathurst
PORT. GUINEA
Bolama
FRENCH GUINEA
Bamako
Niger R.
SIERRA LEONE
Freetown
LIBERIA
Monrovia
IVORY COAST
Bingerville
GOLD COAST
Seccondee
Accra
DAHOMEY
Lome
Porto Novo
Lagos
NIGERIA
Kano
Kuka
Zungeru
Abeokuta
Calabar
Lake Chad
Shari R.
CAMEROONS
Buea
FRENCH EQUATORIAL AFRICA
Fernando Po I. (Sp.)
Prince I. (Port)
St. Thomas I. (Port.)
Annobon I. (Sp.)
Rio Muni (Sp.)
Benito
C. Lopez
Brazzaville
Ubangi R.
ANGLO EGYPTIAN SUDAN
Khartum
Suakin
Blue Nile
ERITREA
Massawah
FRENCH SOMALI COAST
Jibuti
ABYSSINIA
Addis Ababa
BRITISH SOMALILAND
Berbera
ITALIAN SOMALILAND
Mogadiscio
UGANDA
L. Rudolf
KENYA COLONY
BRITISH EAST AFRICA
Pt. Florence
Nairobi
Mombasa
Zanzibar
BELGIAN CONGO
Stanley Falls
Stanleyville
Congo R.
Bukama
Leopoldville
KATANGA
Cabinda
Boma
TANGANYIKA TERRITORY
L. Tanganyika
Tanga
Pemba I.
Zanzibar
Dar-es-Salaam
Aldabra I. (Br.)
Comoro Is. (Fr.)
ANGOLA
St. Paulo de Loanda
Benguela
New Lisbon
NORTHERN RHODESIA
SOUTHERN RHODESIA
Livingstone
Zambezi
Salisbury
Bulawayo
NYASALAND
Nyasa
Zomba
MOZAMBIQUE
Mozambique
Quilimane
Beira
Lourenço Marques
Delagoa Bay
Cape Frio
SOUTHWEST AFRICA
Windhoek
Swakopmund
Walfish Bay
Angra Pequeña
BECHUANALAND
Kalahari Desert
Francistown
TRANSVAAL
Pretoria
Johannesburg
ORANGE FREE STATE
Bloemfontein
Kimberley
Orange R.
NATAL
Pietermaritzburg
Durban
UNION OF SOUTH AFRICA
CAPE OF GOOD HOPE
Cape Town
C. of Good Hope
Port Elizabeth
East London
MADAGASCAR
Tamatave
Antananarivo
Mauritius I. (Br.)
Reunion I. (Fr.)
Ascension I. (Br.)
St. Helena (Br.)
Madeira to London
Teneriffe to London
Lisbon to London
London to Port Said
Antwerp to Boma
Madeira to Cape Town
St. Helena to Cape Town
Cape Town to Melbourne 5810 to Hobart 5840
Durban to Mauritius
Zanzibar to Bombay

is too dry to support more than a few stunted trees or scraggy thorn bushes. This region is within the belt of the trades. These winds bring a fair amount of rain to the east coast, but the interior in most places is too dry for agriculture. Sufficient grass grows on most of the uplands, however, to permit grazing. This great tract of rather dry grass is called the *veld.*

Kaffirs, South Africa

The natives of this region are lighter in colour and more prepossessing than the Negroes of Central Africa. They are tall, well-built, and strong. They are called *Kaffirs* by the white inhabitants of the country. The *Zulus* are the most important Kaffir nation. Not long ago they were the most powerful people in South Africa, with a fine army of fierce and well-trained warriors.

The chief wealth of the Kaffirs is in their herds, which graze on the upland pastures. They also raise a great deal of maize, or Indian corn, as we call it. Many of the white colonists who have settled on the table-lands also rear cattle. There are many sheep-farms, so that South Africa produces much wool. Goats are raised in great numbers for their hair, which is used for weaving a variety of fine cloths. Ostriches are also reared on farms for their beautiful plumes.

The western part of the southern table-land is specially arid. The driest part of it is known as the *Kalahari Desert*. It is not so dry as the Sahara, and scattered natives find sufficient pasturage for their animals in some parts of it.

MOROCCO, ALGERIA, AND TUNIS

omit

Surface, Climate, and People.—These three countries are all French dependencies, with the exception of a small part of *Morocco* under Spanish control. All three are much alike in their general characteristics. Through them all run the *Atlas Mountains*, parallel to the coast in double and sometimes triple ranges. These ranges reach their greatest height in Morocco, and gradually dwindle toward the east. Between the mountains and the sea is a coastal strip of great fertility, well watered in winter by the rain condensed by the mountains from the ocean winds.

The people are mainly *Berbers* and *Arabs*, with a considerable number of *Jews* and *Negroes*. The three countries together are about three times as large as Ontario, with a population over four times as great. The Europeans number a few over a million.

Products.—Agriculture is the main industry. Tobacco and rice are grown upon the hot lowlands; and cereals, olives, grapes, figs, lemons, and oranges upon the cooler mountain slopes. Cattle, sheep, and goats are raised in large numbers. South of the Atlas Mountains, where the desert begins, dates are the only important product. There is one uncultivated crop—esparto grass—used for making paper. This grass

Ploughing with Camels, Algeria

grows over large tracts on the mountain plateaus, and great quantities are exported. Cork is another important natural product.

Cities.—The administrative centre of Morocco is at *Rabat*, a strongly fortified city on the Atlantic coast. *Tangier*, from which much fruit is shipped, is now an international city. Other important cities are *Fez*, noted for its leather, and *Casablanca*. *Algiers*, the capital of *Algeria*, consists of two distinct towns. The older part is a picturesque Moorish town, but the newer portion is well built and modern. *Tunis*, which has an excellent harbour, is the capital of the colony of that name.

LIBIA

Much of the area of this Italian colony is desert. The only fertile sections are a narrow coastal strip and scattered oases in the desert. There is a considerable trade, mainly with Italy, in dates, ostrich feathers, and other desert products. For administrative purposes the country is divided into two districts, *Tripolitania* and *Cyrenaica,* with their capitals at *Tripoli* and *Benghazi*. The harbour of the former is shallow and dangerous, thus proving a serious handicap to the development of trade with Europe.

EGYPT

Extent and People.—The kingdom of Egypt is independent, except that Great Britain retains control of its relations with other countries and maintains a garrison there for the protection of the Suez Canal. The country is almost rainless, and yet it supports a population one and a half times as large as that of Canada. Nearly all the people live in the Nile valley—the greatest oasis in the world.

Long before the Roman Empire, Egypt was a great and wealthy country. The rulers of Egypt, called Pharaohs, built great cities, huge temples, and enormous pyramids of stone. The sites of ancient cities have been excavated and many interesting things found. Every museum contains old Egyptian pottery, jewellery, and tools made thousands of years ago. Many tourists visit Egypt every year to see the ruins of this ancient civilization.

Products.—You have already read of the way in which the waters of the Nile fertilize the broad valley of the river. Owing to its annual flood, the "fellah," as the sturdy brown farmer of Egypt is called, can grow excellent crops of many kinds. While the British were in control of the country, a huge dam was built across the river at *Assuan*. This holds back a portion of the flood-water of the Nile, forming a long lake. From this enormous reservoir water can be released as needed. This ensures to the farmers a continuous supply of water for irrigation, instead of too great a supply when the Nile is high and too little when the Nile is low. Consequently, as many as three crops a year can now be grown on the irrigated farms of Egypt.

Camels and Pyramids, Egypt

The date-palm is the commonest plant of Egypt; it grows everywhere along the river banks and in the desert oases. A great deal of cotton of particularly good quality is cultivated in *Lower Egypt*, especially in the Nile delta. The chief crop of *Upper Egypt* is sugar-cane. Wheat, maize, and millet are the main crops of cereals. Rice and barley are also grown.

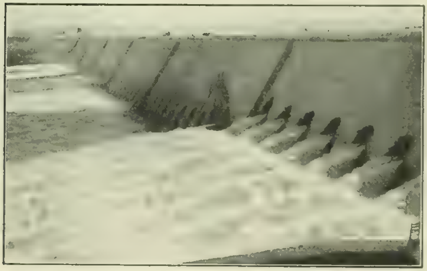
Cities.—*Cairo*, the capital of Egypt, is the largest city of Africa. It is famous for its many mosques, some of which are exceedingly beautiful. Cairo is a busy commercial city, as through it passes much of the trade of Egypt. *Alexandria* ~~is the chief~~ port, and steamers of many nations make it a port of call. *Port Said,* the third city of Egypt, owes its prosperity to the *Suez Canal.*

THE ANGLO-EGYPTIAN SUDAN

This name is applied to that part of the Nile valley extending from the southern frontier of Egypt southward to *Uganda.* The district is somewhat larger than Ontario and Quebec combined, with about the same population. It is under the joint control of Britain and Egypt.

The *Sudan* is not rainless, as is Egypt. In the north there is a very slight rainfall. Toward the east and south the rainfall becomes much heavier, averaging in some places as much as forty-eight inches a year.

Much of the Sudan consists of savanna land, where game of all kinds is found in abundance. Around *Khartum,* the capital, are grassy steppes, which will prove valuable wheat lands when the country is more settled. At present the pasturing of sheep and goats is the chief industry of the natives, although wheat, barley, maize, millet, and cotton are grown to some extent. Gum-arabic, ivory, rubber, hides, and gold are exported in large quantities.



The Dam on the Nile, Assuan, Egypt
Notice the water escaping through the sluices in the dam.

ABYSSINIA (ETHIOPIA)

Abyssinia is a mountainous country about as large as British Columbia. It has a heavy summer rainfall, which causes the Nile flood. The mountain valleys are forested with tropical trees, while the high plateaus are mostly savanna lands. The population, which is almost equal to that of Canada, is of the same race as the Jews and the Arabs. The religion of the country is a debased form of Christianity. The warlike character of the Abyssinians and the mountainous nature of their country have protected them from foreign aggression, and so they have been able to retain their complete independence.

ERITREA

This Italian protectorate stretches for six hundred and seventy miles along the *Red Sea* coast from the *Strait of Bab-el-Mandeb.* The coast-line is fringed with coral reefs and islets. *Massawa,* the seaport, has the unenviable distinction of being one of the hottest places in the world. The whole protectorate is a hot, arid country of little value. The population is scanty, and the productions—chiefly hides, meat, salt, and pearls—are correspondingly small.

SOMALILAND

Somaliland, which forms the north-east corner of the continent, is divided into three protectorates, belonging to France, Britain, and Italy. Like Eritrea, the whole country is hot and dry, with wide expanses of steppe-land in the interior. Somaliland is one of the least known parts of Africa. This is due to the unattractive nature of the country and the fierce and treacherous character of the natives, all fanatical Mohammedans. Except for its game, including giraffes, zebras, antelopes, and gazelles, the land has little interest or value for the white man.

UGANDA, KENYA, TANGANYIKA

The Protectorate of Uganda, the Colony and Protectorate of Kenya, and the mandated territory of Tanganyika are rich in natural resources and promise to become important in the near future. Although they are so close to the equator, only the low-lying coastal plain is unsuited to Europeans. There the climate is unbearably hot and damp. On the uplands of the interior are wide expanses of excellent grazing and agricultural lands. The large lakes, *Nyasa*, *Tanganyika*, *Victoria*, and *Rudolph*, are great assets to the country. Around their shores are the finest agricultural districts, and steamers, already plying on their waters, provide a ready means of communication. A railway connects *Mombasa*, the chief port of *Kenya Colony*, with *Port Florence* on Lake Victoria, and another joins *Dar-es-Salaam* with *Ujiji* on Lake Tanganyika.

The combined area of these three districts is about one-fifth larger than that of the Province of Quebec. The population is about 11,000,000, nearly all natives. The chief products are rubber, gum, cotton, coffee, copra, and ivory.

MOZAMBIQUE omit

This Portuguese possession has an area slightly larger than that of Ontario and a somewhat larger population. The colony produces sugar, rubber, and cocoa-nuts. The mountainous interior is rich in minerals, including gold, coal, and tin.

ANGOLA om

This large Portuguese colony is considerably larger than Ontario. It has a population of over 2,500,000 natives. In the north the colony is densely forested. In general, the land near the coast is dry and poor, while farther inland are wide stretches of savanna land. The chief products are coffee, rubber, tobacco, and cereals. *St. Paulo de Loanda* is one of the few good ports on the Atlantic coast. The capital is *New Lisbon*.

THE BELGIAN CONGO Om

This vast Belgian colony embraces almost the whole valley of the Congo River—an area of over 900,000 square miles. The native population is estimated at 9,000,000. There are only about 23,000 Europeans in the whole country. *Leopoldville* is the capital.

The whole Congo basin is densely forested, and the chief products are forest products—palm oil, ivory, and rubber. There are also government plantations, which produce coffee, cacao, cotton, and rubber. On the eastern and southern frontiers, where savanna lands replace the forests, cattle-rearing is the chief industry.

Carrying Ivory, Mombasa, Kenya Colony

In the south-east is a rich mineral district called the *Katanga*, which yields a great quantity of copper. Diamond-mining is a flourishing industry, as is also the production of radium.

FRENCH EQUATORIAL AFRICA omit

This name is applied to the large territory between Nigeria, the Anglo-Egyptian Sudan, and the Belgian Congo. The whole area is about the same as that of the Belgian Congo; the population is about one-third as large. As yet there is but little trade, although the country produces ivory, palm oil, and rubber. *Brazzaville* is the capital.

WEST AFRICA omit

The term *West Africa* is applied to the southern portion of the westward bulge of the continent north of the *Gulf of Guinea*. This vast territory, as the map shows, is divided among Britain, France, and Portugal. There is, in addition, the small and unimportant Negro republic of *Liberia*.

Back of all the colonies on the coast lies the *Sahara Desert*, which extends southward to about the latitude of *Timbuktu*. The coastal slopes for many miles inward are densely forested. Between the desert and the forest are wide savannas.

The chief products of West Africa are palm oil, cola-nuts, rubber, gold, and timber.

NIGERIA

Nigeria is the largest British colony in West Africa. The northern part of the colony consists of high savanna lands, where the climate is suitable for European settlement. There are some cotton plantations in this region, and Nigeria promises to become a large producer of cotton. In the south the usual forest products are obtained.

Tin, found in many places in Northern Nigeria, is the most important mineral. A railway, with numerous branches, has been built from *Lagos*, the chief port, to *Kano*, in the mining district, and the product of the mines is easily brought out of the country.

BRITISH SOUTH AFRICA

Position, Extent, and People.—With the exception of the two Portuguese colonies of *Mozambique* and *Angola* and a small part of the *Belgian Congo*, the whole of the mainland of Africa south of the tenth parallel is under British control. This vast territory is almost equal in area to Quebec, Ontario, Manitoba, and Saskatchewan combined. As may be seen from the map, it comprises several distinct protectorates and colonies. In the north are *Nyasaland* and *Rhodesia*. Stretching along the Atlantic from Angola to the *Orange River* is the mandated territory of *South-West Africa*, won from Germany during the Great War. Adjoining South-West Africa and Rhodesia is *Bechuanaland*, a British protectorate. In the south and east is the *Union of South Africa*—the most important British territory in the whole continent. It comprises four provinces—(1) *Cape of Good Hope*, or the *Cape Province*, the 2 *Orange Free State*, the 3 *Transvaal*, and *Natal*. 4 Wedged between the Orange Free State, Natal, and the Cape Province is *Basutoland*, a comparatively small district, ruled by its native king under British supervision.

Cape Town, with Table Mountain in the Background

The population of this whole area is somewhat larger than that of Canada, but of the total number not more than two millions are white. These are mainly of Dutch or British descent or birth. The great majority of the natives are *Kaffirs*, although there are also some *Bushmen* and *Hottentots*, particularly in and around the *Kalahari Desert*.

Surface.—The whole area is a high plateau. The western face of the plateau is a sharp escarpment, which drops suddenly to the Atlantic Ocean. The *Orange River* is the only one of any size flowing westward across the plateau. The southern face of the plateau is marked by two gigantic terraces, called the *Great* and *Little Karroos*. Across the eastern face of the plateau, the *Limpopo* and *Zambezi Rivers* have cut deep trenches. As far north as the Limpopo River, the eastern edge of the plateau is close to the sea.

Climate.—The south-east trades from over the Indian ocean bring abundant rain to the east coast and carry some of their load of moisture far inland. The eastern half of the plateau fares better than the western part. A small area around Cape Town lies within the belt of the westerlies during part of the winter, and has its heaviest rainfall during that season.

Lying either in the Torrid Zone or just beyond it, South Africa is a hot country, even though the temperature is modified by the altitude of the plateau. The skies are usually clear and cloudless, so that the constant heat of the sun causes a rapid evaporation of moisture. Over much of its area irrigation is needed for the successful cultivation of cereals. It is often difficult to secure a steady and sufficient supply of water for the towns, the cattle, and the crops.

Transportation.—South Africa is fairly well supplied with railways. A trunk line, part of the projected Cape to Cairo route, runs northward from Cape Town through the Cape Province, Bechuanaland, and Rhodesia, and into the Belgian Congo as far as *Bukama*. A second main line, running northward farther to the east, passes through the middle of the Orange Free State and the Transvaal. Numerous branches from the two main lines serve the whole Union of South Africa. An important branch has been built to the north-west through Cape of Good Hope and South-West Africa. Branch lines connect it with the two ports of *Angra Pequeña* and *Swakopmund*.

NYASALAND

Nyasaland, the country lying around the western and southern shores of Lake Nyasa, is a little more than a third greater in area than the province of New Brunswick. The country is extremely fertile, supporting a population of 1,300,000 people, nearly all natives. Cotton, tobacco, coffee, tea, rubber, rice, maize, and wheat all grow well, and a considerable quantity of cotton, tobacco, tea, and rubber is exported. The chief settlement is *Blantyre*. *Zomba* is the capital. A British governor residing there administers the affairs of the protectorate.

Boer Farmers crossing a River, South Africa

RHODESIA

Rhodesia is slightly larger in area than Ontario, and contains a somewhat smaller population. There are about 45,000 white people in the country. It is one great table-land, with scattered hills rising from the level ground. The hills are usually well wooded, while the plains are mostly grasslands. The *Zambezi River* divides the country into *Northern Rhodesia* and *Southern Rhodesia*.

The principal industry of Rhodesia is agriculture. There are vast expanses of pasture land, on which cattle and sheep are reared. Maize, wheat, and tobacco are the chief crops, although cotton is becoming of increasing importance.

The mineral wealth of Rhodesia is large. Rich deposits of gold have been found, and silver, copper, asbestos, tungsten, lead, zinc, and coal are mined in considerable quantities. Diamonds also have been discovered.

The chief towns are *Salisbury*, the capital of Southern Rhodesia, *Bulawayo*, in the most fertile part of the country, and *Livingstone*, the capital of Northern Rhodesia.

SOUTH-WEST AFRICA

Much of *South-West Africa* is dry and barren. It has a scanty native population and about 25,000 whites. The government is administered by the Union of South Africa. The mineral wealth is large, although little developed. There are productive diamond mines near *Angra Pequeña.* Copper is found in many places. *Windhoek,* 180 miles inland from *Swakopmund,* the chief port, is the capital.

BECHUANALAND

This protectorate, considerably larger in area than Manitoba, is of no great importance. Within its borders lies the greater part of the *Kalahari Desert,* and much of the rest of the country is too dry for farming. Cattle-raising is, therefore, the chief industry.

Ostriches on a South African Farm

take

THE UNION OF SOUTH AFRICA

Cape of Good Hope Province.—This is by far the largest of the four provinces, with an area greater than that of Manitoba. The total population is about equal to that of Ontario, but only one-quarter of it is of the white race.

Agriculture is the chief industry, and wheat the most important crop. Oats, barley, rye, and maize are also grown. Fruits requiring a temperate climate, such as grapes, apricots, apples, and peaches, are grown near the coast. The raising of sheep and goats is an industry of growing importance, much wool and mohair being exported. Ostrich farming also proves profitable, and the province is the chief source of the world's supply of ostrich feathers.

The chief mineral product is diamonds. The largest deposits in the world are located around Kimberley, and already these have yielded an enormous number of diamonds of the highest quality.

A Mud Hoist at a Diamond Mine, Cape Province

Cape Town, the capital and largest city of the province, has a population of over 225,000. The Legislature of the Union meets there. The city is built upon *Table Bay,* and is one of the few good natural harbours of Africa. Through it passes the greater part of the foreign trade of South Africa. *Kimberley,* a city of 40,000 people, owes its existence to the diamond mines in its vicinity. *Port Elizabeth* and *East London* are large and thriving ports upon the south-east coast.

A Street in Johannesburg, Transvaal

The Orange Free State.—This province is about as large as our Maritime Provinces, and has a population of 650,000. There are many large farms in the *Orange Free State.* The agricultural products are much like those of the Cape Province. There are some minerals of value, notably diamonds, gold, coal, and iron.

The capital of the province is *Bloemfontein.* This town is an important railway junction and serves as a distributing centre for a large area of the surrounding country.

The Transvaal.—The *Transvaal* is more than twice the size of the Orange Free State, with a population almost four times as large.

The two chief industries of the Transvaal are gold-mining and farming. Westward from Johannesburg stretches a range of hills, known as the *Rand.* These hills are the richest gold-field in the world. They have already yielded gold to the value of over five billion dollars, and seem inexhaustible.

Pretoria, the capital, is a city of 85,000 people. It is the administrative capital of the Union. *Johannesburg,* the centre of the gold-mining district, is the largest city in the Union. It owes its growth and prosperity wholly to the production of the Rand mines.

A Pineapple Plantation, Natal

Natal.—*Natal,* the smallest of the four provinces, is the most tropical of them all in climate. The ground rises from the coast in a succession of ridges, between which lie deep valleys, clothed with tropical vegetation. The soil of much of the province is not very fertile. In addition to fruits and cereals, tea and sugar-cane are important crops.

Coal is the most important mineral. It is mined at *Newcastle* and *Dundee.* Large iron deposits have been found in close proximity to the coal-fields, but, up to the present, these have not been developed.

Pietermaritzburg is the capital. The port of *Durban,* with a population of over 160,000, is the only city of considerable size.

THE ISLANDS OF AFRICA

omit

Madagascar.—The French colony of *Madagascar* is one of the large islands of the world, measuring about 1,000 miles from end to end. The natives are engaged mainly in agriculture. Rice, sugar-cane, coffee, cacao, cotton, tobacco, and rubber are all produced. The forests of the island yield mahogany, ebony, and rosewood. *Antananarivo* is the capital.

Mauritius.—500 miles east of Madagascar is *Mauritius,* a volcanic island with an area of 740 square miles. It produces sugar, molasses, cocoa-nut oil, and vanilla. *Port Louis,* the capital, has a good harbour. The island is a Crown Colony of Great Britain.

Zanzibar Protectorate.—This British protectorate includes the two islands of *Zanzibar* and *Pemba.* These islands are the main source of the world's supply of cloves. The town of *Zanzibar* is one of the chief ports of East Africa.

Fernando Po.—This is the largest island in the Gulf of Guinea. It is volcanic and covered with jungle. There are some plantations producing the usual West African crops. This island, along with the district of *Rio Muni* upon the coast, belongs to Spain.

Other Islands.—*St. Thomas* and *Prince Islands,* in the Gulf of Guinea, are a Portuguese province. They are noted for their cacao plantations. The *Azores, Madeira,* and *Cape Verde Islands* also belong to Portugal. The *Canary Islands,* close to the coast of the barren Spanish colony of *Rio de Oro,* are owned by Spain. These four groups of islands grow early fruits and vegetables for the European markets. *St. Helena,* to which Napoleon was exiled after Waterloo, is a British coaling-station.

AUSTRALIA AND THE ISLANDS OF THE PACIFIC

AUSTRALIA

Map Questions. — What ocean is east of Australia? West of Australia? What is the name of the large gulf on the north coast? What large indentation is found on the south coast? Name the strait separating *Tasmania* from the continent. What large island is directly north of *Cape York?* What large group of islands is situated in the south Pacific Ocean to the south-east of Australia?

Are there many large rivers in Australia? Find on the map and name the largest. Judging by the number and size of the rivers, do you think that Australia has a light or a heavy rainfall? Where is it heaviest?

Where is the highest land in Australia? In what zones is Australia? Which is warmer, Northern or Southern Australia?

Name the states into which Australia is divided. Judging again by the rivers, which of these states do you think are well watered?

Position, Size, and People. — *Australia* means "The Southern Land," and the name is well chosen, for Australia is the only continent which lies entirely south of the equator. The Tropic of Capricorn divides the continent into two almost equal parts. Since Australia is in the Torrid Zone or close to it, the whole continent has a tropical or sub-tropical climate.

Natives with Boomerangs, Australia

Although the smallest of the continents, Australia is the largest island in the world. Its area is about three-quarters of that of Canada. From east to west it extends for 2,400 miles—a width as great as that of the Atlantic Ocean between Halifax and Liverpool. From north to south it extends a little under 2,000 miles.

Australia is an important part of the British Empire, and the colonists from the Motherland and their descendants to-day form a white population numbering about 6,500,000. The aboriginal inhabitants of Australia are a peculiar race, somewhat resembling the Negro. The natives are fast dying out, although there are still some 60,000 scattered over the whole continent.

The North Coast.— The whole of the northern coast lies fairly within the tropics. It receives an abundant rainfall, especially during the summer, which is at its height from November to January. During these months a monsoon blows over the Indian Ocean to Northern Australia and brings with it heavy rain, which provides abundant moisture in the coastal districts.

Because of the heavy rainfall and tropical climate, the vegetation of the northern coastal region is very luxuriant. There are dense forests of stately timber trees, among which may be noted valuable cedars and many varieties of gum trees, some of which tower to a height of 400 feet or more. The shores of the *Gulf of Carpentaria*, which are low and swampy, are fringed with mangroves. Here and there are impenetrable thickets of interlacing vines. The whole region is covered with flowering plants of many varieties. It is particularly noted for its profusion of lovely orchids.

The West Coast.—The west coast of Australia is not so well watered as the north, as it lies too far south to feel the effect of the monsoons. The southern corner, however, lies in the path of the westerlies during the winter, and therefore receives a fair amount of rain during that season. It has forests of valuable trees, including the jarrah—one of the gum family. The timber of this tree is extremely hard and durable and is much used in Australia as blocks for street-paving. In this part of the west coast are many fine farms.

The South Coast.—The *Great Australian Bight* extends for 1,100 miles along the southern coast. The shore of the Bight is one of the dreariest places in the whole world. It is fringed with rocky cliffs, unbroken for 700 miles by even a tiny rill of water. There is seldom any rain, for the west wind sweeps along the coast instead of over it, and, in any case, the cliffs are too low to cool the wind sufficiently to cause condensation.

The south coast, from the Bight to the south-eastern corner of the continent, is much more favoured. Here is a narrow coastal plain of fertile soil, backed by fairly high mountain ranges. This section, in *South Australia* and *Victoria*, forms a splendid area of agricultural lands.

The island of *Tasmania*, separated from the continent by *Bass Strait*, is mountainous. Exposed as it is to the ocean winds, it has an abundant rainfall and a cool, equable climate. Farming and fruit-growing are the main occupations of its people.

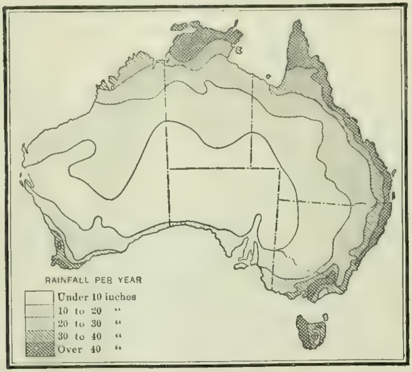
The East Coast.—The east coast of Australia, for the greater part of its length, lies in the path of the south-east trade-winds. A range of mountains, called the *Dividing Range*, parallels the coast. Between the Dividing Range and the ocean lies a rich plain, seldom more than fifty miles wide and in many places much less. The mountains cool the trade-winds sufficiently to cause a heavy rainfall over their eastern slopes and the coastal plain. They are not high enough, however, to condense all the moisture out of the winds, so that there is a slight rainfall upon their western slopes as well. Consequently, the eastern slopes and the coastal plain are well timbered, while scattered trees and wide grasslands are characteristic of the western slopes.

The most curious feature of the east coast is the *Great Barrier Reef*. This is a stupendous coral reef, which parallels the coast for a distance of 1,200 miles, making a channel of calm water, thirty to seventy miles wide, between it and the shore. In places the reef is 100 miles wide. The ocean rollers break in thundering surf along its outer edge. The inner edge of the reef is like a vast garden. Some of the corals grow in smooth, round masses, others in delicate leaf-like forms; others form long, branching stems; others a lacy net-work like fretted ivory. The diversity of colour is even greater than that of form; vivid greens,

Corals on the Great Barrier Reef, Australia rich purples, quiet browns, bright yellows, delicate pinks, and flaming reds blend and contrast in gorgeous profusion.

The Interior.—Australia is shaped much like a shallow plate, the coastal plains and highland forming the edge. The edge of the plate is comparatively narrow all the way around.

The high ground bordering the western coast falls slowly away in broad, arid plains toward the centre of the continent. This vast area is mainly desert. As you have seen, the trade-winds coming from the east lose their moisture in passing over the eastern uplands. When they reach Central and Western Australia, they are hot, dry winds, which parch the ground as they sweep over it. This section of Australia is almost rainless.



Rainfall Map, Australia

The eastern uplands slope more steeply toward the centre of the continent than do those of the west. As their western slopes receive a little rain from the trade-winds, they are fairly well timbered on their upper levels along the courses of the rivers. After the timbered areas come wide, rolling downs, producing excellent grass. These are the great grazing lands of Australia, upon which millions of sheep find pasturage. The downs pass gradually into arid desert land, in which only the sparsest vegetation is found.

The *Great Australian Desert* is one of the largest in the world. The greater part of it is covered with gray sand, in some places level, in others drifted into dunes and ridges. Much of it is dotted with thorn bushes; some areas are covered with stunted trees; others are absolutely bare of all vegetation. The sun beating down upon the naked earth makes this one of the hottest places in the world.

The slight rains which fall on the interior slopes of the highland form a number of creeks and rivers, which, following the slope of the land, flow toward the centre of the continent. Most of them disappear in the thirsty sand long before they reach the centre of the depression. In the rainy season some of the larger rivers pour their flood waters into shallow depressions in the central regions. These form the lakes of Australia. The largest are *Lakes Eyre, Gairdner*, and *Torrens*, all of which are salt. For the greater part of the year these so-called lakes are merely large areas of brackish mud, covered with a treacherous saline crust.

Rivers.—Besides the rivers which drain inland, there are numerous streams rising on the eastern side of the ridge and running through the coastal plain to the ocean. These are, without exception, short rivers of comparatively little use for navigation.

The *Murray*, with its long tributaries, the *Darling* and the *Murrumbidgee*, forms the only great river system of Australia. These streams all rise upon the western slopes of the Dividing Range, and, after flowing in a general south-west direction, empty into the *Southern Ocean*.

Plants and Animals.—The forests of Australia contain many familiar trees, such as the beech and the oak. The most common family of trees in Australia, however, is the gum-tree family, or eucalyptus trees, of which there are many varieties. These trees annually shed their bark instead of their leaves. The shreds of dead bark hanging from the trunk give a dismal and gloomy appearance to the forests. Their leaves, too, instead of lying flat, like the leaves of our trees, hang edgewise, so that these trees give little shade. In the mountain valleys tree-ferns are abundant.

The grass-lands of Australia are extensive and valuable. They produce many kinds of grasses suitable for pasturage. The most remarkable fodder plant of Australia is salt-bush—a low, spreading plant which flourishes in very dry soil. The shepherd regards salt-bush as his one salvation when a drought has parched the ground and withered the grass.

Australia is the land of the marsupial—a general term applied to any animal which carries about its young after birth in a pouch of skin upon its body. There are more than one hundred varieties of marsupials in Australia, ranging in size from animals no larger than tiny mice to the big gray kangaroo, which measures six or seven feet from nose to tail. Even more curious than the marsupials are two little animals which lay eggs. One of these is the duck-billed platypus—a water animal about two feet long. Its fur is soft and long and makes beautiful wraps. The other is the spiny ant-eater. It has a long tongue, with which it can lick up the ants on which it feeds.

A Duck-billed Platypus

This curious egg-laying mammal, the only representative of its family, is mainly nocturnal in habits.

The most hated animal in Australia is the dingo. It is a kind of wild dog, which often does serious damage to the flocks of sheep.

A Kangaroo

The average full-grown kangaroo measures about five feet from the tip of its nose to the base of its tail, and may weigh as much as two hundred pounds. The tail measures about four and a half feet.

The birds of Australia are as curious as the animals. Parrots of almost every hue abound in the forests. The lyre-bird has a tail shaped like a lyre. The bower-bird builds a floor of woven twigs near its nest and erects a bower of twigs upon this platform. It brings bright feathers, bones, and shells to decorate its bower. There are also birds—the cassowary and the emu—which are much like ostriches.

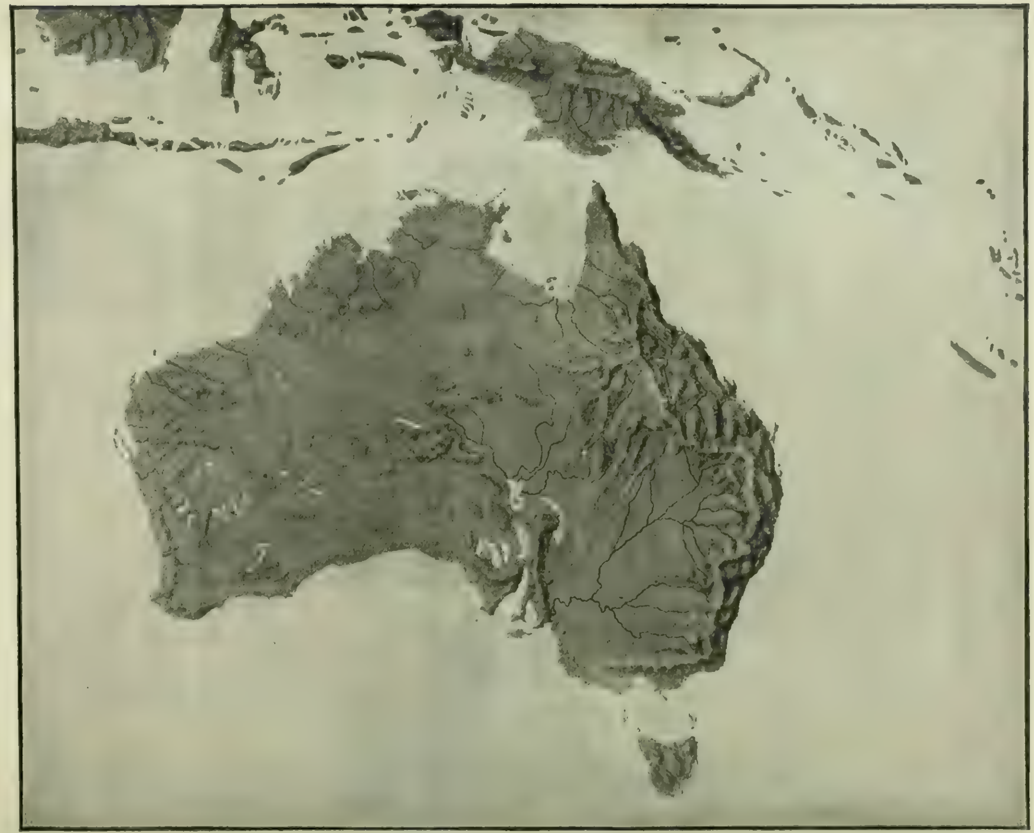
Reptile life abounds in Australia. The whole continent is infested with venomous snakes. Crocodiles live in the northern rivers. Lizards of many kinds are found everywhere.

Minerals.—The mineral wealth of Australia is one of the most striking features of the continent. Every part of the country, with the single exception of South Australia, has large gold-bearing areas. Silver, tin, copper, and coal are also found.

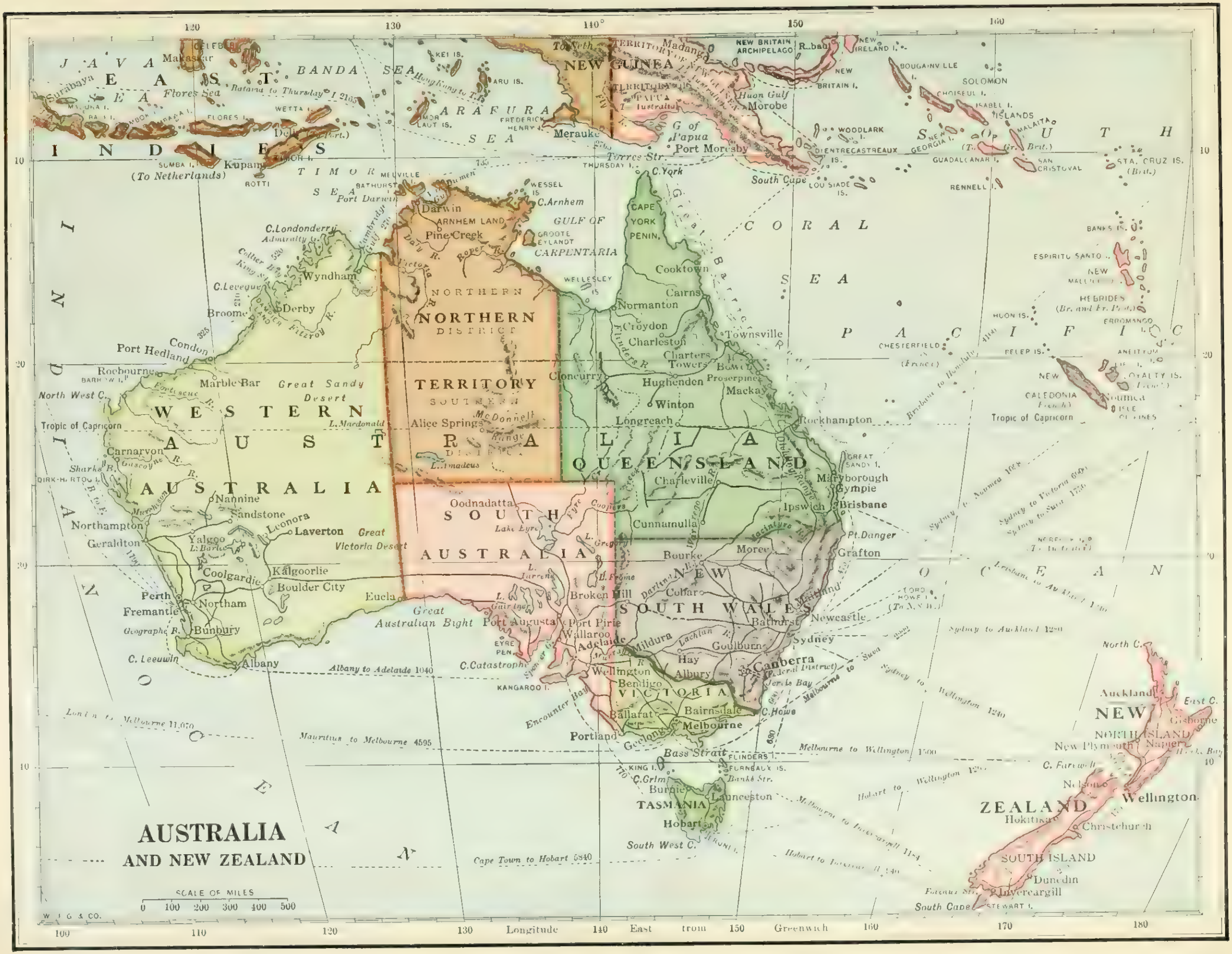
THE STATES OF AUSTRALIA

General.—In 1901 the six original colonies of Australia *New South Wales, Victoria, South Australia, Queensland, Western Australia,* and *Tasmania*—were united into a federation known as the *Commonwealth of Australia,* with a government resembling that of Canada. *Canberra,* a federal district in New South Wales, 940 square miles in area, is the capital. A wide corridor gives access to Jervis Bay on the coast.

The federal government, in addition to its other responsibilities, has under its di-



RELIEF MAP OF AUSTRALIA



AUSTRALIA
AND NEW ZEALAND

rect control the district known as the *Northern Territory*, divided for administrative purposes into the *Northern District* and the *Southern District*. Although it has an area of about 520,000 square miles, its population is very small. The only large town is *Palmerston*, with but a few hundred white inhabitants.

An Artesian Well, Australia

New South Wales.—*New South Wales*, the oldest of the Australian colonies, is about three-quarters of the size of Ontario. Two-thirds of its area is well watered and adapted for either agriculture or stock-raising. Sheep-farming is the staple industry, and the value of the annual wool clip is very large. Cattle are also raised in large numbers. Wheat is the chief grain crop. New South Wales also possesses great mineral wealth. Gold, silver, lead, copper, and coal are all mined. Of the important metals iron alone is not found, and therefore iron and steel products bulk largely in the list of imports. The population numbers about two and a half millions. Almost one-half of the inhabitants of the state live in the capital, *Sydney*, which has one of the finest natural harbours in the world. The city is the commercial and industrial centre of the state. *Newcastle*, the second city of New South Wales, is the chief coal-port of the continent.

The Circular Quay, Sydney

Victoria.—*Victoria*, the smallest by far of the Australian States, is the most fertile section of all Australia. Wool and other live-stock products are its chief exports, but it also produces wheat and wine. Victoria has rich gold-fields, and their discovery in 1851 gave the first great impetus to the colonization of Australia. With such advantages it has become the most densely populated and prosperous section of the continent. *Melbourne*, with a population of over a million, is the capital and commercial centre of the state. The city has a magnificent harbour, many handsome public buildings, fine parks and gardens, and extensive manufacturing interests. Other leading centres are *Geelong*, *Ballarat*, and *Bendigo*.

South Australia.—*South Australia* is not quite so large as Ontario. The best part of the state is in the south, a considerable part of the interior being desert. Its wealth is derived almost entirely from agricultural operations, chiefly wheat-growing and stock-raising. Iron and copper are the most important minerals. *Adelaide*, the capital, is situated on the shores of *St. Vincent Gulf*.

Queensland. — *Queensland* occupies the whole north-eastern corner of the continent. It is about one and a half times the size of Ontario, containing over 670,000 square miles. A large part of the state is still uncleared virgin land. In the north, all tropical fruits and plants can be successfully grown. Sugar-cane is an important crop, and Indian corn is extensively grown. In the south, uplands stretch for hundreds of miles westward from the Dividing Range. Here the heat natural to the latitude is somewhat moderated by the elevation, and therefore these vast grassy plains are ideal for stock-raising. Queensland is fairly rich in minerals, especially gold and tin. The capital, *Brisbane,* is situated on the river of the same name, twenty-five miles from the ocean.

Merino Sheep, Australia
Each clip yields about nine pounds of wool.

Western Australia. — *Western Australia* comprises the whole western portion of Australia — about one-third of the entire continent. Nearly all this state is more or less desert, but there are extensive forests of very valuable timber. There is a fertile strip on the coast of the south-western corner of the island. *Perth,* the capital, is close to the middle of this strip. *Fremantle,* an important port of call for steamers, lies on the coast to the south of the capital. *Albany* is an imperial coaling-station. There is also a habitable strip upon the north-west coast, but this district is not very attractive. How small, comparatively, these areas of good land are, may be seen from the fact that only one three-thousandth part of the state is under cultivation. The barren lands of Western Australia, however, are not entirely worthless. Gold has been found in several places, and already busy towns, like *Kalgoorlie,* to which water is pumped from near Perth, 300 miles away, and *Coolgardie,* have sprung up in the desert.

Tasmania.—The mountainous island of *Tasmania* is almost as large as New Brunswick. It has a delightful, temperate climate, much fertile soil, and considerable mineral wealth. The eastern part of the island, being drier, is not so densely forested as the western portion and possesses much good grass-land. Apples, pears, and other fruits of the Temperate Zone do well there. Oats are the staple grain crop.

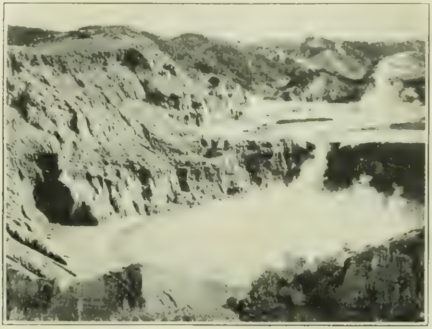
In addition to its wealth of forest, the western portion has rich deposits of copper, silver, tin, gold, and coal. The chief ports are *Hobart,* the capital, and *Launceston,* which are both quite small cities.

Wheat in Bags at a Railway Siding, Australia
Compare with our elevator system in Canada.

NEW ZEALAND

Position, Extent, and People. — The *Dominion of New Zealand* consists of a group of volcanic islands, lying in the Southern Pacific some 1,200 miles to the east of Australia. It includes *North Island, South Island, Stewart Island,* and many smaller islands along the coast. The total area of the islands is a little over 100,000 square miles.

Although Captain Cook took possession of New Zealand in the name of Great Britain as early as 1769, it was not until the middle of the nineteenth century that colonization began in earnest. The *Maoris*, as the natives of the islands are called, at first gave some trouble, but this has long since passed away.



The Crater of a Geyser, New Zealand

Surface and Climate.—New Zealand is a land of mountains, lakes, and rivers. The mountains extend in a lofty range, broken only by *Cook Strait*, from the south-west corner of South Island right to East Cape—a distance of nearly 1,000 miles. The mountain scenery of South Island is especially magnificent. The south-west coast of South Island is much indented by long, narrow inlets, surrounded by forested hills rising from the water's edge, peak after peak, to their snow-clad summits. Through the green of the trees, streams sparkle here and there in the bright sunshine or fall in glittering cascades over the steep cliffs, while in the upper valleys the snow of the glaciers gleams as though encrusted with diamonds. In the mountain valleys nestle many lakes, and everywhere are short rivers running down to the ocean.

The mountains of North Island are famous for a very different reason. Here are pools of boiling mud, which now and again send a column high into the air; here are lakes of hot water; here you may walk over land through which steam is bursting everywhere. Here, too, is *Mount Tarawera*, which not so many years ago burst into eruption.

New Zealand, unlike Australia, fears no drought; it lies in the path of the west winds which sweep over the islands all the year round, and which, cooled by the high mountains, bring abundant rain. Naturally, the rainfall is heaviest upon the western coast, but no part suffers from too scanty a supply.

The islands lie in the South Temperate Zone, and their climate is mild and equable. In the north it is warm enough to admit of the growth of sub-tropical fruits. Even in the south the winters are mild. In South Island, especially, the climate much resembles that of Great Britain. This is one reason why New Zealand has attracted many colonists from the Motherland.

Vegetation.—The heavy rainfall and mild climate make the natural vegetation of New Zealand luxuriant. Much of the land is forested with stately pines, especially on the western mountain slopes.

The mountain glens are carpeted with ferns of many kinds, ranging from delicate, lacy fronds to huge tree-ferns. The upper plateaus are covered with bracken. The eastern slopes of the mountains of South Island pass into a great plain, and here, where the rainfall is less, are excellent grasslands and rich soil for tillage. This plain, called the *Canterbury Plain*, is the only one of any considerable size in the island.

A Meat-freezing Station in the Hills, New Zealand

The most valuable tree native to New Zealand is the kauri pine. This giant of the forest sends up a straight, clean trunk for sixty or seventy feet before it branches. Some of these trees measure forty to fifty feet in circumference around the base. The timber of the kauri pine is hard and durable. This tree also yields a gum which is used for making varnish. The gum exudes in big lumps in the forks of the lowest branches. The best gum is found buried in the swamps, where long ago were forests of kauri trees. After the tree has fallen and rotted away, the lump of gum remains. Many men are busy in the kauri districts digging out this buried gum. North Island has two kauri forests.

Wild Life.—New Zealand has practically no native four-footed animals. There are no snakes, and the lizards are harmless. There are, however, many birds—black swans, parrots, and wild ducks. One parrot, called the kea parrot, is large and powerful enough to kill lambs. New Zealand, also, had many varieties of wingless birds, but these are all now extinct.

Industries.—The chief industry of New Zealand and the main source of its wealth is sheep-farming, both for mutton and for wool. Dairy-farming and fruit-growing are of great and growing importance. Hemp is also grown. There are many small farms, on which good crops of cereals are raised. The chief exports are wool, frozen meat, hides and skins, apples, butter, and cheese.

Although the islands are rich in coal, the great distance from a market and the difficulty of procuring labour have hindered the development of the mines. Gold is found in large quantities; in fact, since its discovery in 1857, over $550,000,000 worth of this precious metal has been mined.

In the early days of New Zealand there was very little manufacturing, but recently the number of factories has rapidly increased. The product of most of these, however, is for local use. The principal manufactures are woollens, leather goods, boots, shoes, soaps, candles, and flour. There is a considerable timber industry, most of its product being required within the islands.

Cities and Towns.—The capital of New Zealand is *Wellington*, on North Island. The city of *Auckland* is picturesquely situated on Auckland Peninsula. At Auckland the peninsula is only six miles wide, so that the city has two harbours, one upon the west and one upon the east coast. The eastern harbour is much the better, as the other is too shallow to admit large vessels. The largest cities of South Island are *Dunedin* and *Christchurch*. Through them pass the products of the fertile farms of South Island.

NEW GUINEA

The island of *New Guinea* is exceeded in area only by the island of Australia. The western half belongs to the Netherlands; the south-eastern part, known as *Papua*, belonging to Great Britain, is administered by Australia, and the north-eastern section, known as *New Guinea*, is also administered by the Commonwealth as a mandated territory.

A ridge of lofty volcanic mountains forms the backbone of the island. Some of the peaks are so high that they are clad in perpetual snow, although they are so close to the equator. The island has a heavy tropical rainfall, and the mountain slopes are heavily forested. Very little of the interior has as yet been explored. The vegetation and animals are very similar to those found in Northern Australia. The Papuans, as they are called, are a branch of the Negro race.

Cotton, rice, tobacco, trepang, timber, mother-of-pearl, and cocoa-nuts are the chief products of Papua, but the rubber tree and the coffee plant have been recently introduced. Cattle, horses, and goats are raised.

THE SMALLER ISLANDS

The thousands of islands which dot the Southern Pacific are divided into two groups. *Melanesia*, which means the "islands of the blacks," comprises all the western archipelagos, and *Polynesia*, meaning "many islands," all the eastern groups. Melanesia is inhabited by black natives, resembling the Papuans; Polynesia, by brown-skinned peoples much like the Maoris. Most of the islands belong to Great Britain.

The islands are either of volcanic or of coral formation. The coral islands produce mainly trepang, pearls, and copra. Some of the volcanic islands are very fertile. On these sugar-cane is grown, as well as fruits and vegetables, such as bread-fruit, taro, and yams, which form the staple food of the islanders.

Natives of the Solomon Islands producing Fire

In Melanesia are included the *Solomon Islands*, the *New Hebrides*, *New Caledonia*, and the *New Britain Archipelago*. The Solomon Islands belong to Great Britain, while the New Hebrides are governed jointly by Great Britain and France. New Caledonia, a French possession, is one of the few places in the world where, outside of Ontario, nickel is found in any quantity. The New Britain Archipelago, with its two large islands *New Britain* and *New Ireland*, is administered by Australia.

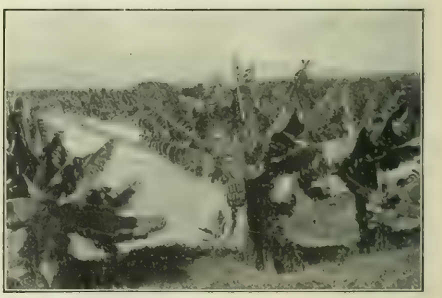
In Polynesia the two principal groups are the *Fiji Islands* and the *Samoan Islands*. In reality, the Fiji Islands are on the boundary between Melanesia and Polynesia, the natives belonging partly to one race and partly to the other. The group belongs to Great Britain. *Suva*, on one of the larger islands, is the chief seaport. It is a port of call for the steamers of the Canadian line running from Vancouver to Australia. The majority of the islands of the Samoan group are administered by New Zealand, but a few belong to the United States.

HAWAIIAN ISLANDS

The only important group of islands in the Pacific lying north of the equator are the *Hawaiian Islands*, which belong to the United States. The group consists of eight large volcanic islands and a large number of smaller ones. The most celebrated of the mountains is *Mauna Loa*, on which is the crater of *Kilauea*. This crater, in which lies a lake of molten lava, the Hawaiians have fitly named "The House of Everlasting Burning."

As the islands lie within the tropics and are surrounded by the ocean, they have a mild and even climate. The north-east trade-winds bring plenty of moisture, although on the leeward side of the mountains there is much arid land. The soil is very fertile. Sugar-cane, tobacco, cotton, rubber, rice, coffee, and tropical fruits, especially the pineapple, are the principal products.

The capital and most important city is *Honolulu*. It has a good harbour and is a port of call and coaling-station for vessels crossing the Pacific to and from the Orient. Honolulu is a favourite resort for tourists.



A Field of Bananas near Honolulu, Hawaii

THE BRITISH EMPIRE

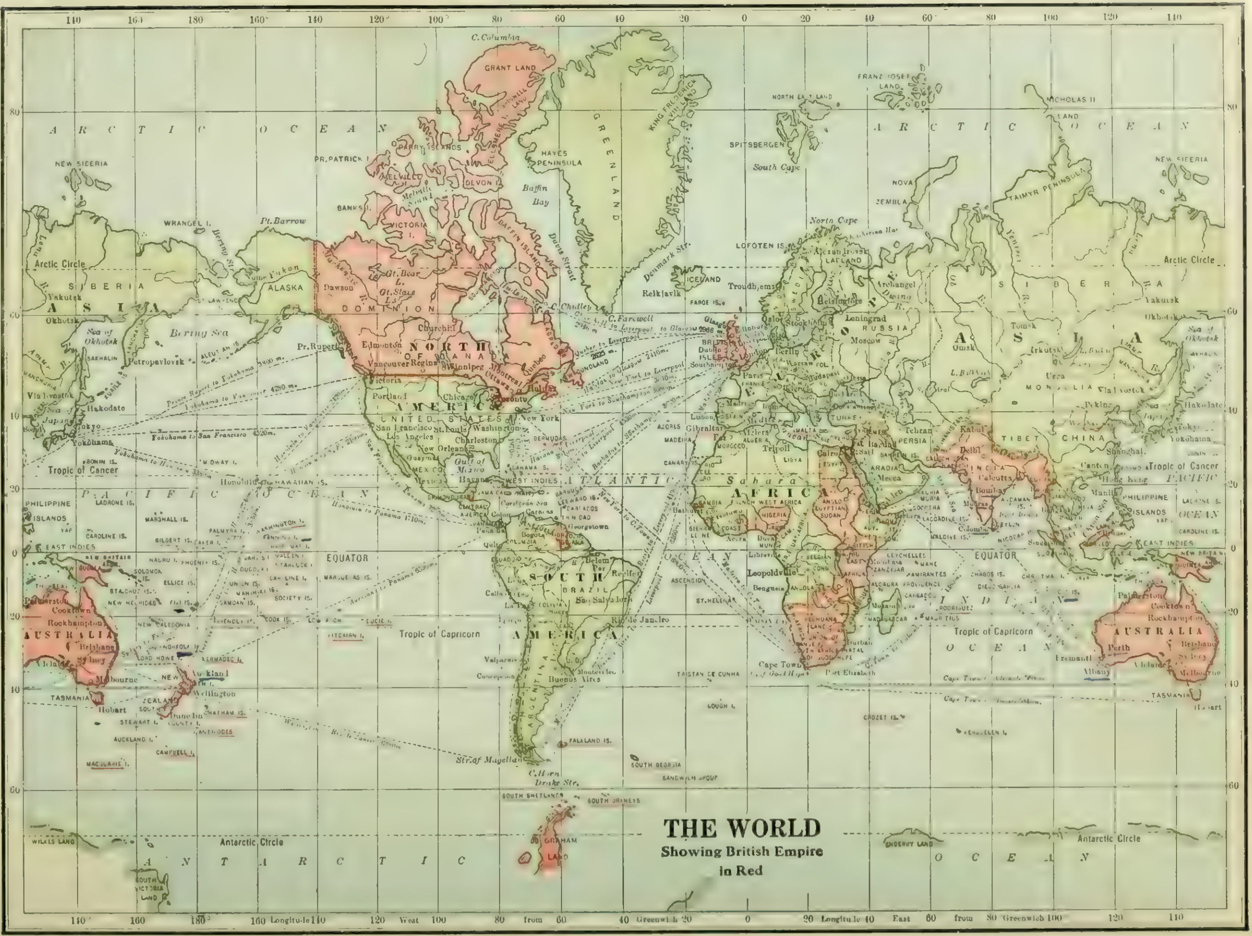
Size, Extent, and People.—The British Empire includes all those parts of the world whose inhabitants owe allegiance to the British sovereign. It comprises more than a quarter of the land area of the globe—about 13,355,000 square miles of territory. Unlike most of the great empires of the past, the British Empire is made up of many widely separated countries and territories, varying in size from Canada, with her vast area of over 3,600,000 square miles, to Gibraltar, two square miles in extent. British lands are found in every continent. British islands dot every ocean. The empire extends from farthest north to farthest south, from farthest east to farthest west, girdling the globe with lands over which floats the Union Jack, proud symbol of power, of justice, and of freedom.

Within the Empire is found every kind of scenery, from the snow-capped summits of the Rockies and the Himalayas to the sun-scorched plains of Australia. There is every variety of climate, from the hot, humid air of the Guinea Coast to the clear atmosphere and biting cold of the Polar Isles. Every type of plant grows somewhere on British soil, from the lowly moss and lichen of the tundra to the stately teak of Burma. Every kind of useful animal is found somewhere within its borders, from the dog of the Eskimos to the camel of the Arabs. Under the Union Jack live representatives of all the races of the world, from the lowest and most degraded savage to the finest type of the highest civilization. All told, the inhabitants of the British Empire number 450,000,000—more than a quarter of all the people in the world.

The Empire and the Sea.—The British Empire is largely a Maritime Empire. For the most part, it was won by hardy British seamen, who pushed their way into the uttermost corners of the world and brought country after country under the beneficent sway of Britain. It was held, and still is held, largely by the power of the British Navy, which has long controlled the sea-ways of the world. By far the greater part of its enormous commerce is carried in British merchant vessels, which link port to port and country to country, enabling the wheat of Canada, the wool of Australia, the tea of Ceylon, and the apples of New Zealand to reach the markets of the Motherland. Without the free use of the sea the Empire could not live.

So it is that, although railways and other land communications play a great part, they are secondary in importance to the sea communications of the Empire. The merchant fleet of Britain herself is the largest and most efficient in the world, while that belonging to the great colonies is far from small. These ships are the most important material bond uniting the far-flung dominions of the King-Emperor.

To enable both the navy and the merchant fleet to accomplish their tasks, Britain has secured coaling-stations all over the world. As a vessel cannot steam much more than 3,000 miles without replenishing her bunkers, there should be coaling-stations at intervals of 3,000 miles or so along the great ocean trade-routes. The Empire possesses the most complete system of such stations in the world. A British ship is sure of finding a supply of coal at almost any of the principal ports of the British Isles, Canada, Australia, New Zealand, British Africa, or India. In addition, there are facilities for coaling vessels at St. Helena, Ascension, or the Falkland Islands in the South Atlantic; at Jamaica or the Bermudas in the North Atlantic; at Gibraltar, Malta, and Port Said in the Mediterranean;



THE WORLD
Showing British Empire in Red

at Aden, on the Gulf of Aden; at Colombo in Ceylon; at Singapore; and at Labuan in the China Sea; at Hong Kong on the Chinese coast; at Chagos, Seychelles, or Mauritius in the Indian Ocean; at Thursday Island and Suva in the South Pacific; nor do these exhaust the list. Many coaling-stations are small and apparently insignificant islands, but they play no small part in the life of the Empire. The most important coaling-stations are fortified and garrisoned to protect them from attack. At many of them dockyards have been built, so that ships may be repaired in time of need.

The countries of the Empire are also kept in close communication by submarine cables. There are, in the whole world, about 300,000 miles of submarine cables. Of these, almost a half—140,000 miles—are British property. By this immense and far-reaching cable system the governments of various parts of the Empire are in constant touch with one another; commercial transactions are greatly facilitated; and in time of war valuable information is quickly sent to its proper destination. The protection of the cable system is one of the duties of the Imperial Navy.

Nothing brings home the great extent of the Empire more forcibly than to trace the "All-British cable" route around the world. Leaving the British Isles, it crosses the Atlantic, coming ashore at Trinity Bay, Newfoundland. From there it is carried overland across Newfoundland, thence by sea again to Sydney, Cape Breton Island, and from there to Halifax, which has direct communication with Vancouver upon the Pacific coast. From Vancouver Island a cable runs by way of Fanning Island, Fiji, and Norfolk Island to Auckland in New Zealand and to Brisbane in Australia. The latter city has telegraphic connection with the cities of Albany and Perth, from which a cable traverses the Indian Ocean by way of Cocos, Colombo, Madras, Bombay, and Aden. From Aden the route lies through the Red Sea, the Mediterranean Sea, and the Atlantic Ocean, by way of Suez, Port Said, Malta, Gibraltar, and London. There are several loops or extensions along the route. An important one from Cocos Island connects Mauritius, Durban, Cape Town, St. Helena, Ascension, and Sierra Leone.

Nearly all these places and very many others are also equipped with wireless installations, which supplement the cables and add materially to the speed and safety with which messages can be sent.

The commerce of the Empire follows certain routes, all centring upon the British Isles. The following are the chief:

1. From the British Isles across the Atlantic to Canada, thence by either the Canadian National or the Canadian Pacific across Canada, and from there across the Pacific Ocean to Hong Kong, Singapore, and India, or to New Zealand, the Pacific Islands, and Australia.
2. From the British Isles across the Atlantic to the Panama Canal, and thence to New Zealand and Australia.
3. From the British Isles to the East by way of Gibraltar, the Mediterranean, the Suez Canal, the Red Sea, and the Indian Ocean.
4. From the British Isles along the west coast of Africa to Cape Town, and thence across the Indian Ocean to India and to Australia and New Zealand.

Government.—The countries of the Empire, aside from the Motherland, may be divided into five groups, as far as government is concerned: (1) *The Dominions,* (2) *The Indian Empire,* (3) *The Crown Colonies,* (4) *The Protectorates,* (5) *The Mandated Territories.*

The Dominion of Canada, the Commonwealth of Australia, the Dominion of New Zealand, the Union of South Africa, Newfoundland, and the Irish Free State are *Self-governing Dominions* under the Crown. Northern Ireland is also self-governing, but it differs from its sister Dominions in that it sends representatives to the Imperial Parliament at London. In the Dominions the government is modelled after that of Great Britain, the King being represented by a Governor-General or a Governor. Each has a Parliament consisting of two Houses. Within its own sphere, the Parliament of each of the Dominions is supreme, without interference of any kind from the Imperial Government.

The *Indian Empire* is a part of the British Empire, and the King of Great Britain is also Emperor of India. In the Imperial Cabinet there is an official known as the Secretary of State for India, who is assisted by an Advisory Council. While the Secretary and his Council have control over all matters relating to India, they do not attempt, unless under unusual circumstances, to interfere with the actions of the Indian Government. The King is represented by the Governor-General, or Viceroy, who is assisted by a Council of State and a Legislative Assembly, the latter almost wholly elective.

The actual work of government in India is carried on by the Governor-General and an appointed Executive Council. The country is divided into fifteen provinces, with a Governor or an Administrator in each, assisted by a Legislature largely composed of native members. In fact, the form of government at present in force resembles in many ways that of Canada. The endeavour is to allow the natives of India the utmost freedom possible, and to give them a large share in the conduct of government. The relations of the Indian Government to the various native states differ widely. Except in matters pertaining to war and to a standing army, they are allowed largely to govern themselves, the British Government being represented in each state by a Resident.

In general, *Crown Colonies* are those parts of the Empire in which, owing to an unsuitable climate or to a large native population, few Europeans make permanent homes. A few white men develop and control the resources of the country, enabling it to take its proper place in the international trade of the world. Some of the smaller Crown Colonies, however, are purely naval or military posts, important for the protection of the trade-routes of the Empire.

In every Crown Colony is a Governor, representing the King. In some cases, as in Gibraltar and St. Helena, the Governor has absolute powers. In others, as in Ceylon and the Straits Settlements, he is assisted by a Council nominated by the Crown. In a third group, which includes most of the British West Indies and Malta, the laws are made by a Legislature wholly or partly elected by the people. In every case, except in the naval and military colonies, the tendency is to give the natives an ever-increasing share of power as they show increasing ability for self-government. Eventually, many of the Crown Colonies will become self-governing.

In the *Protectorates*, such as Somaliland, Bechuanaland, and Nyasaland in Africa, the natives are ruled by their own chiefs under the supervision of British officials. Protectorates tend, as they develop, to become Crown Colonies, just as Crown Colonies, such as were formerly the states of the Australian Commonwealth, become self-governing Dominions.

At the conclusion of the Great War certain territories captured from the enemy were assigned by the League of Nations to Great Britain, France, Japan, and others of the allied powers. In this way it has fallen to Great Britain to be responsible for the government of large territories in Africa, as well as in Asia and in the South Seas. Tanganyika, Cameroon, and Togoland in Africa, and Palestine and Iraq in Asia are included in these *Mandated Territories*, as they are called. For the most part these new portions of the Empire are governed as Crown Colonies.

Further, under the League of Nations the Commonwealth of Australia has control of New Guinea, the Bismarck Archipelago, and other islands in the South Pacific; the Dominion of New Zealand controls former German Samoa and other islands; the Union of South Africa has the mandate for the government of South-west Africa. In all cases of mandated territory the government must be carried on in strict accordance with certain regulations laid down by the League of Nations.

REFERENCE TABLES

CITIES AND TOWNS IN CANADA WITH A POPULATION OF 7.000 AND OVER

Figures for Prairie Provinces are those given in 1926 census; all others are 1931 estimates.

ONTARIO

Toronto	621,596
Hamilton	145,000
Ottawa	125,496
Windsor	70,031
London	69,742
Kitchener	30,274
Brantford	30,100
Oshawa	25,550
St. Catharines	25,347
Fort William	24,630
Sault Ste. Marie	22,844
Peterborough	22.487
Kingston	22,000
Port Arthur	21,000
Guelph	20,393
Stratford	18,909
Niagara Falls	18,539
Sarnia	17,003
St. Thomas	16,869
Sudbury	16,622
Chatham	16,441
East Windsor	16,000
North Bay	15,978
Galt	13,752
Belleville	13,443
Timmins	13,000
Owen Sound	12,304
Woodstock	11,898
Sandwich	11,819
Walkerville	11,219
Cornwall	10,938
Welland	10,141
Pembroke	9,506
Brockville	9,433
Waterloo	8,750
Midland	8,000
Orillia	7,983
Kenora	7,708
Barrie	7,500
Lindsay	7,156

QUEBEC

Montreal	916,300
Quebec	136,000
Verdun	51,140
Three Rivers	40,000
Sherbrooke	27,959
Hull	27,887
Outremont	26,200
Westmount	25,000
Lachine	18,250
Shawinigan Falls	15,000
St. Hyacinthe	13,208
St. Jean	12,476
Levis	11,808
Chicoutimi	11,720
Joliette	10,830
Thetford Mines	10,700
Valleyfield	10,051
Sorel	10,000
Jonquière	10,000
Granby	9,500
Cap de la Madeleine	9,223
St. Jerome	8,742
Rivière du Loup	8,026
Grand' Mère	8,000

NEW BRUNSWICK

Saint John	60,500
Moncton	22,000
Fredericton	9,000
Campbellton	7,000

NOVA SCOTIA

Halifax	60,000
Sydney	22,789
Glace Bay	20,000
New Glasgow	9,500
Dartmouth	9,000
Truro	8,000
New Waterford	7,600
Amherst	7,500
Yarmouth	7,500

PRINCE EDWARD ISLAND

Charlottetown	13,378

MANITOBA

Winnipeg	191,998
Brandon	16,443
St. Boniface	14,187

SASKATCHEWAN

Regina	37,329
Saskatoon	31,234
Moose Jaw	19,039
Prince Albert	7,873

ALBERTA

Calgary	65,513
Edmonton	65,163
Lethbridge	10,893
Medicine Hat	9,536

BRITISH COLUMBIA

Vancouver	240,421
Victoria	43,750
New Westminster	20,600
North Vancouver	8,884
Nanaimo	9,500
Prince Rupert	7,250

THE LARGEST CITIES OF THE WORLD

London, England	7,849,000
New York, U.S.A.	6,930,446
Berlin, Germany	4,024,165
Chicago, U.S.A.	3,376,438
Paris, France	2,871,429
Shanghai, China	2,677,100
Osaka, Japan	2,114,804
Buenos Aires, Argentina	2,030,765
Moscow, Soviet Union	2,025,947
Tokyo, Japan	1,995,567
Philadelphia, U.S.A.	1,950,961
Vienna, Austria	1,855,362
Leningrad, Soviet Union	1,614,008
Detroit, U.S.A.	1,568.662
Los Angeles, U.S.A.	1,238,048
Budapest, Hungary	1,217,325
Bombay, India	1,175,914
Rio de Janeiro, Brazil	1,157,873
Calcutta, India	1,132,246
Sydney, Australia	1,127,470
Hamburg, Germany	1,079,126
Cairo, Egypt	1,064,567
Glasgow, Scotland	1,061,900
Melbourne, Australia	1,000,000
Birmingham, England	968,600
Naples, Italy	966,423
Milan, Italy	961,979
Warsaw, Poland	936,713
Montreal, Canada	916,300
Rome, Italy	914,631
Mexico, Mexico	906,063
Liverpool, England	872,600
Brussels, Belgium	825,783
St. Louis, U.S.A.	821,960
Hankow, China	818,800
Madrid, Spain	816,928
Canton, China	811,800
Peiping, China	811,138
Baltimore, U.S.A.	804,874
Tientsin, China	800,000
Boston, U.S.A.	781,188
Nagoya, Japan	768,558
Barcelona, Spain	767,774
Manchester, England	755,900
Amsterdam, Netherlands	743,404
Copenhagen, Denmark	731,496
Cologne, Germany	700,222
Munich, Germany	680,704
Kyoto, Japan	679,963
Leipzig, Germany	679,159
Prague, Czecho-Slovakia	676,663
Constantinople, Turkey	673,029
Pittsburgh, U.S.A.	669,817
Marseilles, France	652,196
Kobe, Japan	644,212
San Francisco, U.S.A.	634,394
Chungking, China	624,000
Genoa, Italy	623,196
Toronto, Canada	621,596
Dresden, Germany	619,157
Turin, Italy	591,316
Havana, Cuba	581,076
São Paulo, Brazil	579,033
Milwaukee, U.S.A.	578,249
Rotterdam, Netherlands	577,694
Buffalo, U.S.A.	573,076
Alexandria, Egypt	573,063
Lyons, France	570,840
Breslau, Germany	557,139
Victoria, Hong Kong	550,000
Changsha, China	535,800
Lisbon, Portugal	529,524
Madras, India	526,911
Sheffield, England	515,440
Kiev, Soviet Union	513,789
Santiago, Chile	507,296
Nanking, China	497,500
Washington, U.S.A.	486,869
Leeds, England	476,500
Stockholm, Sweden	474,094
Essen, Germany	470,524
Frankfurt, Germany	467,520
Minneapolis, U.S.A.	464,356
Montevideo City, Uruguay	458,784
New Orleans, U.S.A.	458,762
Athens, Greece	452.919
Baku, Soviet Union	452,808
Lodz, Poland	451,974
Palermo, Italy	447,335
Newark, U.S.A.	442,337
Dusseldorf, Germany	432,633
Edinburgh, Scotland	429,600
Hangchow, China	426,900
The Hague, Netherlands	425,119
Hanover, Germany	422,745
Odessa, Soviet Union	420,888
Dublin, Irish Free State	418,981
Kharkov, Soviet Union	417,186
Belfast, Northern Ireland	415,151
Yokohama, Japan	405,888
Hyderabad, India	404,187
Kansas, U.S.A.	399,746
Nuremburg, Germany	392,494
Bristol, England	390,400
Danzig, Danzig	390,000
Seattle, U.S.A.	365,583
Indianapolis, U.S.A.	364,161
Soochow, China	350,000

COUNTRIES OF THE WORLD

According to the latest available census returns and estimates, 1930

	Area in Square Miles	Population
NORTH AMERICA (Approx..)	9,350,000	163,700,000
Alaska	586,400	55,036
Canada	3,684,723	8,899,779
Alberta	255,285	607,584
British Columbia	355,855	524,582
Manitoba	251,832	639,056
New Brunswick	27,985	387,876
Northwest Territories, The	1,309,682	7,988
Nova Scotia	21,428	523,837
Ontario	407,262	2,933,662
Prince Edward Island	2,184	88,615
Quebec	594,434	2,361,199
Saskatchewan	251,700	820,738
Yukon Territory	207,076	4,157
Central America	215,995	6,267,677
Greenland	827,300	14,355
Mexico	767,198	14,899,905
Newfoundland	152,734	268,175
United States of America, The	3,026,800	122,775,046
West Indies, The	91,038	10,541,356
SOUTH AMERICA (Approx.)	7,122,000	78,856,000
Argentina	1,153,119	10,646,814
Bolivia	514,155	2,861,212
Brazil	3,275,510	39,103,856
Chile	290,119	4,364,395
Colombia	440,846	7,967,788
Ecuador	109,978	1,562,500
Guiana, British	89,480	307,784
" Dutch	54,291	148,960
" French	34,740	47,341
Paraguay	161,647	836,360
Peru	532,047	6,147,000
Uruguay	72,153	1,808,286
Venezuela	393,874	3,053,497
EUROPE (Approx.)	3,675,000	476,000,000
Albania	17,374	833,519
Andorra	191	5,231
Austria	32,369	6,686,576
Belgium	11,755	7,995,558
Bulgaria	39,814	5,596,800
Czecho-Slovakia	54,207	14,535,429
Danzig	754	390,000
Denmark	17,108	3,457,390
Estonia	18,353	1,116,553
Finland	132,608	3,611,791
France	212,659	41,020,000
Germany	181,723	63,178,619
Great Britain and Northern Ireland	94,633	44,200,000
England	50,874	35,681,019
Scotland	30,405	4,882,497
Wales	7,466	2,205,680
Northern Ireland	5,237	1,256,561
Greece	49,912	6,204,684
Hungary	35,911	8,603,922
Iceland	39,709	104,812
Irish Free State	26,600	2,971,992
Italy	119,710	41,168,000
Latvia	24,440	1,895,016
Liechtenstein	65	10,716
Lithuania	21,000	2,316,615
Luxemburg	999	285,524
Monaco	8	24,927
Netherlands, The	13,220	7,730,577
Norway	125,086	2,810,592
Poland	149,958	30,408,247
Portugal	35,490	6,032,991
Rumania	122,282	17,393,149

	Area in Square Miles	Population
Russia[1]	1,607,800	108,336,000
San Marino	38	13,013
Spain	194.800	22,601,753
Sweden	173,156	6,105,190
Switzerland	15,940	4,018,500
Turkey in Europe	9,000	1,203,000
Yugo-Slavia	96,134	13,290,000
ASIA (Approx.)	16,831,000	1,018,000,000
Afghanistan	245,000	8,000,000
Arabia	1,000,000	7,000,000
Baluchistan	134.638	799,625
Bhutan	18,000	300,000
China	4,279,170	439,759,380
China Proper	1,534,420	411,356,367
Manchuria	363,610	22,083,434
Mongolia	1,367,600	1,800,000
Sinkiang	550,340	2,519,579
Tibet	463,200	2,000,000
East Indies, The Dutch	733,715	52,824,569
India	1,805,332	318,942,480
Indo-China, French	285,000	20,700,000
Iraq	143,250	2,849,282
Japan	265,129	83,456,929
Malay States	51,134	2,448,000
Nepal	54,000	5,600,000
Palestine	10,000	919,064
Persia	628,000	9,000,000
Russia[2]	6,632,700	38,677,000
Siam	200,148	10,284,000
Siberia, see Russia		
Straits Settlements	1,600	1,059,968
Syria	60,000	2,831,622
Transcaucasia, see Russia		
Turkestan, see Russia		
Turkey in Asia	274,000	12,447,000
AFRICA (Approx.)	10,362,000	118,590,000
Abyssinia	350,000	10,000,000
Algeria	847,552	6,063,496
Anglo-Egyptian Sudan, The	1,008,100	5,483,889
Angola	491,895	2,521,956
Bechuanaland	275,000	152,983
Belgian Congo, The	918,000	8,723,276
Egypt	383,000	14,213,364
Eritrea	45,754	407,474
French Equatorial Africa	912,049	3,127,707
Kenya	224,960	2,891,691
Libya	637,202	766,016
Morocco	218,525	5,309,146
Mozambique	428,132	3,652,000
Nigeria	335,700	18,966,574
Nyasaland	37,890	1,329,127
Rhodesia, Northern	287,950	1,269,508
" Southern	149,000	1,032,703
Somaliland, British	68,000	344,700
" French	5,790	85,778
" Italian	190,000	1,200,000
South-West Africa	311,820	258,905
Tanganyika	374,000	4,747,808
Tunis	48,300	2,159,708
Uganda	94,204	3,255,367
Union of South Africa	471,917	7,085,752
West Africa (French)	1,247,191	13,541,611
AUSTRALIA AND ISLANDS OF THE PACIFIC (Approx.)	3,398,000	8,780,000
Australia	2,974,581	6,373,219
New Guinea, British	159,040	737,392
" " Dutch	160,692	195,460
New Zealand	103,569	1,474,365

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[1] Figures for Russia include the whole of the Union of Soviet Socialist Republics situated in Europe.
[2] Figures for Russia include the whole of the Union of Soviet Socialist Republics situated in Asia.

PRONOUNCING VOCABULARY

KEY TO PRONUNCIATION

ā as *a* in ale.	ĕ as *e* in end.	ū as *u* in use.	ch as *ch* in chair.
ă " *a* " am	ī " *i* " ice.	ŭ " *u* " up.	g " *g* " go.
ah " *a* " arm, car.	ĭ " *i* " ill.	ōō " *oo* " food.	ng " *n* " sing.
aw " *a* " all.	ō " *o* " old.	ŏŏ " *oo* " foot.	zh " *z* " azure.
ē " *e* " eve.	ŏ " *o* " odd.	ow " *ow* " cow	

Abyssinia	ab-is-sin'-e-a.
Acapulco	ah'-kah-pool'-ko.
Aden	ā'-den.
Aegean	ē-jē'-an.
Afghanistan	ahf-gahn-is-tahn'.
Aisne	ain.
Ajaccio	ah-yaht'-chō.
Ajerbaijan	a'-jĕr-bī'-jăn.
Aleutian	ah-lu'-shăn.
Alsace	ahl-sahs'.
Amur	ah-moor'.
Andaman	an-dă-man'.
Andorra	an-dor'-ra.
Antananarivo	an-ta-na-na-rē'-vō.
Anticosti	an-tĭ-kos'-tĭ.
Antigonish	ant'-ig-o-nēsh'.
Appalachian	ap-pa-lā'-chĕ-an.
Aral	ahr'-al.
Arequipa	ah-rā-kee'-pah.
Arkansas	ahr'-kan-saw.
Arras	ar-rah.
Ascotan	as-cō'-tăn.
Astrakhan	ăs'-tra-kan'.
Asuncion	a-sōōn'-se-on.
Azores	ah-zorz'.
Bahama	ba-hā'-mah.
Bahia	bah-e'-ah.
Baikal	bī'-kahl.
Baku	ba-koo'.
Balearic	băl-e-ăr'-ik.
Barranquilla	bahr'-rahn-kēl'-yah.
Barbados	bahr-bā'-dōz.
Basel	bah'-zĕl.
Batum	bah-tōōm'.
Bechuanaland	bĕtch-oŏ-ah'-nă-land.
Beirut	bā'-root.
Belle Isle	bĕl īle.
Benares	ben-ah'-rĕz.
Ben Nevis	ben nĕv'-is.
Bergen	bĕr'-gĕn.
Berne	bĕrn.
Bhutan	bōō-tahn'.
Blanc	blong (nearly).
Bloemfontein	blŏŏm'-fŏn-tān'.
Bokhara	bō-kah'-rah.
Boma	bō'-ma.
Bordeaux	bōr-dō'.
Boulogne	boo-lōne'.
Brahmaputra	brah-mă-poo'-tră.
Bras d'Or	brah dōr'.
Bremen	brĕm'-en.
Bucharest	bū-ka-rest'.
Budapest	boo'-da-pest.
Buenos Aires	bwā'-nōs īr'-es.
Bulawayo	bōō'-lă-wah'-yo.
Cadiz	kā'-diz.
Cairo	kī'-rō.
Calais	kăl'-ā or kăl'-is.
Callao	kahl-lah'-o.
Caracas	kah-rah'-kahs.
Caribbean	kăr-ib-bē'-an.
Carrara	că-rah'-rah.
Cartagena	car-tă-jē'-nă.
Caucasus	kaw'-kah-sŭs.
Cawnpore	kawn-pōr'.
Cayenne	kā-en'.
Celebes	sĕl'-ĕ-bēz.
Chagos	chā'-gōs.
Chaleur	shah-loor'.
Chaudière	show-dē-air.
Cheviot	chĕv'-ē-ŭt.
Chimborazo	chim-bō-rah'-zō.
Choco	chō-kō'.
Chosen	chō-sĕn'.
Cobequid	kŏb'-ĕ-kwid.
Cocos	cō'-cōs.
Cologne	kō-lōne'.
Colon	kō-lōne'.
Costa Rica	kŏs'-ta reek'-ă.
Cotopaxi	kō-to-pak'-sē.
Courcelette	kour-se-lĕt'.
Cracow	krăk'-ō.
Cuzco	koōs'-kō.
Danzig	dant'-zig.
Dardanelles	dahr-dă-nĕlz'.
Deccan	dĕk'-an.
Delhi	del'-hī or dĕl'-i.
Dnieper	nē'-per.
Dniester	nē'-ster.
Dominica	dŏm-ĭ-nee'-kah.
Dunedin	dŭn-ē'-din.
Dunvegan	dŭn-vē'-gan.
Durban	dŭr-ban'.
Durazzo	dū-rad'-zō.
Dwina	dwē'-nah.
Ecuador	ek-wah-dōr'.
Eritrea	ē-rit'-rē-ă.
Erzerum	ĕr'-zĕr-oom.
Esquimalt	ĕs-kwī'-malt.
Essequibo	ĕs-seh-kē'-bō.
Esthonia	es-thōn'-ia.
Euphrates	ū-frā'-tēz.
Eyre	air.
Faroe	fā'-rō.
Fiume	fū'-mā.
Fiji	fē'-jē.
Fuji-yama	foo-jē-yah'-mah.
Funen	foō'-nen.
Fusan	fū-san'.
Galapagos	găl-ă-pā'-gŏs.
Galatz	gal-atz'.
Garonne	gah-rōn'.
Gatun	gat-oon'.
Gothenburg	gŏt'-ĕn-burg.
Greenwich	grĭn'ij- or grĕn'-ij.
Guadalquiver	gwah-dahl-kwiv'-er.
Guadeloupe	gah-dĕ-loop'.
Guatemala	gwa-te-mah'-la.
Guayaquil	gwī-a-kēl'.
Guernsey	gurn'-zē.
Hague	hāg.
Haiti	hā'-tĭ.
Hanoi	hah-noi'.
Hawaii	hah-wī'-e.
Hecate	hĕk'-ă-tē.
Hedjaz	hed'-jăzz.
Herat	hĕ-raht'.
Himalaya	hĭ-mah'-la-yah.
Hindu Kush	hin'-doo-koōsh'.
Hoogly	hōō'-glē.
Iquique	ē-kē'-kā.
Irrawaddy	ĭrr-ah-wah'-di.
Irkutsk	ĭr-koōtsk'.
Jena	yā'-nah.
Johannesburg	yō-hahn'-nes-burg.
Juan de Fuca	wan dā foo'-ka.
Juan Fernandez	jōō'-an fer-nan'-dez
Jugo-Slavia	yū'-go-slăv'-ia.
Juneau	jū-nō'.
Kabul	kah-bool'.
Kalahari	kăl-ă-hăr'-ē.
Kalat	ka-laht'.
Kaministikwia	kăm-ĭn-iss'-tĭ-quē'-ă
Kandahar	kan-dă-hăr'.
Katrine	kăt'-rin.
Kenora	kē-nō'-ră.
Kenya	kĕn'-yă.
Khartum	kahr-tōōm'.
Khiva	kē'-vah.
Khyber	kī'-bur.
Kiel	keel.
Kiev	kē'-ev.
Kilauea	kē-lou-ā'-ă.
Kirghiz	kĭr'-gēz.
Kobe	kō'-bĕ.
Kronstadt	krŏn'-shtat.
Kuen-Lun	kwen-loōn'.
Lachine	lah-sheen'.
Lagos	lā'-gŏs.
La Guaira	lah gwī'-rah.
Leipzig	līp'-sik.
Lhasa	lhah'-sah.
Liard	lee'-ărd.
Lille	lēl.
Lima	lē'-măh.
Limoges	lē-mōzh'.
Lithuania	lith-ū-ā'-ne-ă.
Loire	lwahr.
Lomond	lō'-mŭnd.
Long Sault	long soō'.
Lorraine	lŏr-āne'.
Los Angeles	los an'-jel-ez.
Lucerne	lū-sĕrn'.
Lucknow	lŭk'-now.
Lyon	lē-ōng (nearly).
Lyons	lī-unz.
Madagascar	mad-ah-gas'-kahr.
Maggiore	mahd-jō'-rā.
Magnetawan	măg-nĕt'-ă-wăn.
Malacca	mah-lăh'-ka.
Malar	mā'-lăr.
Manila	mah-nĭl'-a.
Malay	mah-lā'.
Malpeque	mahl-peck'.

Manaos	măn-ah′-ōs.
Maracaibo	mah-rah-kī′-bō.
Maree	mar-ē′.
Marienbad	ma-rē′-en-bad.
Maritza	mah′-re-tsa.
Marmora	mahr′-mŏ-ră.
Marne	mărn.
Marseille	mahr′-sā′-ye(nearly).
Marseilles	mahr-sālz′.
Martinique	mahr-tĭ-nēk′.
Massowa	mass-ō′-ă.
Mattawa	mat′-ta-wă.
Mauritius	maw-rish′-ĭ-us.
Medina	mā-dē′-nah.
Melbourne	mĕl′-burn.
Mersey	mĕrz′-ey.
Mesopotamia	mĕs′-o-po-tām′-i-a.
Messina	mĕs-sē′-nah.
Meuse	mūz.
Michipicoten	mish-i-pĭ-kō′-ten.
Milan	mĭl-ăn′.
Minas	mī′-nas.
Mindanao	min-da-nah′-o.
Miquelon	mik-ĕ-lŏn′.
Miramichi	mĭr-a-mĕ-shē′.
Missouri	mis-zōō′-rē.
Mocha	mō′-kah.
Moluccas	mō-lŭk′-kaz.
Mombasa	mŏm-bah′-sah.
Monaco	mon′-ah-kō.
Monastir	mon′-as-tēr.
Monte Carlo	mon′-tē car′-lō.
Montevideo	mon′-tē-vĭd′-e-o.
Moscow	mŏs′-kō.
Mozambique	mō-zăm-beek′.
Munich	mū′-nik.
Nagasaki	nah-gă-sah′-kē.
Nanaimo	nan-ī′-mō.
Nassau	nas′-saw.
Natal	nă-tahl′.
Nepal	nĕ-pawl′.
Newfoundland	nū-fŭnd-land′.
New Orleans	nū ŏr′-le-anz.
Nicaragua	nik-ah-rah′-gwah.
Nice	nēs.
Nicobar	nĭk-ō-bahr′.
Nicosia	nē-co-zē′-a.
Nipigon	nĭp′-ĭ-gon.
Nipissing	nĭp′-is-sing.
Nizhni Novgorod	nēzh′-nē nov′-go-rod′.
Nyasa	nē-ahs′-sah.
Obi	ō′-bē.
Oder	ō′-der.
Odessa	ō-des′-sa.
Okanagan	ō-kăn-ah′-găn.
Okhotsk	ō-kŏtsk.
Orizaba	ō-re-sah′-bah.
Osaka	o-zah′-kah.
Otonabee	ō-tŏn′-a-bee.
Ozark	ōz′-ark.
Pamir	pah-mēr′.
Papua	pap′-oo-a.
Para	pah-rah′.
Paraguay	pah-ra-gwā′.
Paramaribo	păr-a-măr′-ĭ-bō
Patagonia	păt-ă-gō′-nĭ-a.
Pechora	pah-chō′-ra.
Pelée (Mount)	pe-lā′.
Pelee	pĕl′-ē.
Perim	pe-rēm′.
Pernambuco	pĕr-năm-bōō′-kō.
Pembina	pĕm′-bĭn-a.
Peru	pe-roo′.
Petitcodiac	pet′-ē-kō-dē′-ak.
Philippolis	phil-lĭp′-o-lis.
Philippine	fil′-ip-pin.
Piedmont	pēd′-mont.
Pietermaritzburg	pēter-măr′-itz-burg.
Pisa	pē′-zah.
Plata	plah′-ta.
Pompeii	pom-pā′-yē.
Popocatepetl	po-pō-kah-tā′-pĕt'l.
Porto Rica	pōr′-tō rē′-kō.
Port Said	port sa-ēd′.
Posen	pō′-zĕn.
Potomac	pot-ō′-mack.
Potosi	pō-tō-sē′.
Prague	prāg.
Pretoria	prē-to′-re-ah.
Pruth	proot.
Pueblo	pwĕb′-lō.
Puerto Barrios	pwer′-to barr′-e-ōs.
Puget	pūj′-et.
Punta Arenas	poon′-tah ah-rā′-nahs.
Pyrenees	pĭr′-ĕ-nēz.
Qu' Appelle	kăp-pĕl′.
Quetta	quet′-tă.
Quito	kē′-to.
Ranier	rā′-nēr.
Reikjavik	rī′-kyah-vĕk.
Restigouche	rĕs-tĭ-goōsh′.
Revel	re′-vel.
Rhodesia	ro-dē′-zya.
Richelieu	rē-shĕ-loo′.
Rideau	rē′-dō.
Riga	rē′-gah.
Rio Grande	re′-ō grahn′-dā.
Rio de Janeiro	rē′-ō dā zha-nār′-ō.
Riviera	rē-vē-ā′-rah.
Rouen	roo′-ong (nearly).
Saar	săhr.
Saguenay	sag-ĕ-nā′.
Sahara	să-hah′-rah.
Saigon	sī-gōn′.
St. Etienne	sānt ĕt-yĕn.
St. Helena	sānt hĕl-ē′-na.
St. Helier	sānt hĭl-yĕr.
St. Hyacinthe	sānt hī′-ă-sinth.
St. Julien	sānt jūhl′-yan.
St. Maurice	sānt mō-rēs′.
St. Pierre	sahn pē-ār′.
St. Roque	sahn rōk.
Ste. Anne de Bellevue	sānt ann de bell′-vū.
Salisbury	sawls′-bŭry.
Samarkand	săm′-ăr-kand′.
Samoa	sah-mō′-a.
San Juan	sahn hoo-ahn′.
San Marino	sahn măr-ē′-no.
Sao Paulo	sah′-o pou′-lo.
Santiago	sahn-tē-ah′-gō.
Santo Domingo	sahn′-to dōm-ing′-o.
Saskatoon	sas′-kă-toon.
Sault Ste. Marie	sōo sānt mā-ree.
Scheldt	skĕlt.
Seine	sān.
Seoul	sā-ōōl′.
Sevastopol	sē-văs-tō-pŏl′.
Seville	se-vĕl′. or sev′-il.
Seychelles	sā-shĕl.
Shanghai	shang-hī′.
Shawinigan	shah-win′-ĕ-găn.
Sierra Leone	sē-ĕr′-rah lē-ō′-ne.
Sierra Nevada	se-ĕr′-rah ne-vah′-dah.
Singapore	sing′-gă-pōr′.
Solent	sō-lent.
Somaliland	sō-mah′-lē-land.
Sophia	sō-fē′-ah.
Sorel	sō-rĕl′.
Soufrière	souf′-rē-air.
Strasbourg	strahs′-boŏrg.
Sudan	soo-dahn′.
Suez	sōō′-ĕz.
Sulaiman	soo-la′-e-mahn′.
Sumatra	soo-mah′-tră.
Syracuse	sĭr′-ah-kūs.
Tabriz	ta′-brēz.
Tampico	tăm-pē′-kō.
Tanganyika	tahn-ghan-yē′-kah.
Tangier	tahn-jēr′.
Tarawera	tara-wē′-ra.
Tegucigalpa	te-gōō′-se-gal′-pa.
Teheran	tā-he-ran′.
Temagami	tĕm-ag′-ă-mē.
Tibet	tĭb-et′.
Tientsin	te-en′-tsĕn.
Tierra del Fuego	tē-ĕr′-rah dĕl fwā′-go.
Timiskaming	tĭm-ĭs′-kă-ming.
Tokyo	tō′-kē-o.
Toulouse	toō-looz′.
Trebizond	trĕb′-i-zond.
Trieste	trē-ĕst′.
Tripoli	trĭp′-o-lē.
Turin	tū-rĭn′, or tūr′-in.
Tyrol	tĭr′-ol.
Uganda	oō-gahn′-da.
Ujiji	ōō-jē′-jē.
Ukrainia	oo-krān′-ia.
Ungava	ŭng-gah′-vah.
Urga	ōōr′-ga.
Valdai	vahl-dī′.
Valdeau	vahl-dō′.
Valencia	vah-lĕn′-shĕ-a.
Valparaiso	vahl-pah-rī′-sō, or zō.
Venezuela	vĕn-ĕz-wē′-lah.
Vera Cruz	vĕr′-ah krōōz.
Versailles	vĕr-sālz. or ver-sah′-e.
Vimy	vē′-mē.
Vistula	vis′-tū-la.
Vladivostok	vlah-dē-vos-tŏk′.
Weser	vā′-zer.
Wetaskiwin	wĕ-tăs′-kĭ-wĭn.
Willamette	wĭll-am′-et.
Worcester	woōs′-ter.
Wrangell	rang′-ell.
Wyoming	wī-ō′-ming.
Yangtse	yang-tsē′.
Yenisei	yĕn-ē-sā′-ē.
Yokohama	yō-kō-hăh′-mah.
Yosemite	yō-sĕm′-ĭ-tē.
Yucatan	yoō-kah-tahn′.
Zambesi	zahm-bā′-ze
Zanzibar	zahn-zĭ-bahr′.
Zealand	zē′-land.
Zuider Zee	zī′-der zē.
Zurich	zōō′-rik.

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